

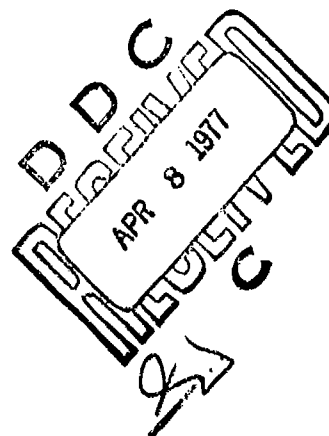
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TECHNICAL REPORT TD-77-5

A SUMMARY OF AERODYNAMIC CHARACTERISTICS FOR
NRAP-AROUND FINS FROM MACH 0.3 TO 3.0

Aeroballistics Directorate
Technology Laboratory

1 March 1977



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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Wrap-around fin effectiveness for tube-launched missiles was investigated in a series of 6 wind tunnel tests. Wind tunnels were AEDC Propulsion Wind Tunnel, NASA/Langley Research Center Unitary Plan Wind Tunnel, and McDonnell Douglas 4-foot Trisonic Wind Tunnel. Mach number range was 0.3 to 3.0. Basic model was a 2-caliber secant ogive nose with an 8-caliber cylindrical afterbody and 21 fin configurations. Variations in the coefficients are presented for changes in fin geometry including taper ratio and leading edge sweep angle.		

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20. ABSTRACT (Concluded)

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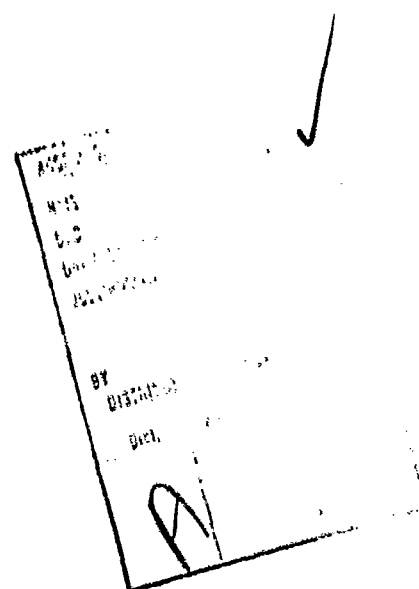
→ aspect ratio, exposed semi-span, and root chord length; opening angle, fully closed to 10^{deg} past fully open; and body step down. ↑

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- (B) $C_{N_{\alpha_F}}$, $X_{cp_{\alpha_F}}$, and $Y_{cp_{\alpha_F}}$ versus M
- (C) $C_{N_{\alpha_{FE}}}$, $X_{cp_{\alpha_{FE}}}$, and $C_{A_{\alpha=0_{FE}}}$ versus M
- (D) $C_{N_{\alpha_{FE}}}$ and $X_{cp_{\alpha_{FE}}}$ versus M
- (E) $C_{N_{\alpha_{FE}}}$, $C_{m_{\alpha_{FE}}}$, $X_{cp_{\alpha_{FE}}}$, and $C_{A_{\alpha=0_{FE}}}$ versus θ
- (F) $K_M(B)$ and $K_B(W)$ versus M

INTRODUCTION

The military services have been interested for some time in missile designs that have tube-launched applications. Wrap-around fins (WAF) have always been a promising means of stabilizing missiles with tube-launched constraints. The fins have been investigated thoroughly in a series of six wind tunnel tests (references 1 through 6) by the U. S. Army Missile Command (MICOM) and sponsored in part by the U. S. Air Force Armament Laboratories (AFAL). The need for a working summary of these tests arises as the application of WAFs to new weapons systems increases.

This report summarizes data obtained in the six wind tunnel tests. Aerodynamic characteristics for WAFs are presented over the Mach number range 0.3 to 3.0. Variations in the coefficients are presented for changes in fin geometry including taper ratio and leading edge sweep angle, aspect ratio, exposed semi-span, and root chord length; opening angle, fully closed to 10 degrees past fully open; and body step down.

Table 1 is a collation summary for each of the six tests and table 2 matches the configuration tested with the corresponding test. Analysis and comparison of the various parameters are in reference 7.

APPARATUS

A. Test Facilities and Conditions.

Wind tunnel tests were conducted in three facilities: the Arnold Engineering Development Center Propulsion Wind Tunnel 4T, references 1, 2, 4, and 6; the NASA 4-foot Unitary Wind Tunnel at Langley Field,

Virginia, reference 3; and the McDonnell Douglas Aerophysics Laboratory 4-foot Trisonic Wind Tunnel, reference 5.

A summary of the nominal test conditions for the three tunnels is in table 3. Complete test conditions for the six tests can be obtained from references 1 to 6.

B. Instrumentation

For all AEDC tests, the model was supported by AEDC's 6-component strain gage balance 1B (6-1.50-0.500-1.12 M) and sting 4S (S-1.12F-35.38-1.850M). In addition, each fin was supported by an independent 3-component strain gage balance built and calibrated by AEDC for MICOM. These balances are identified by MICOM drawings, RDK-12500 series.

The maximum rated capacities for the AEDC 1B main balance are as follows:

Normal force	500 lb
Side force	250 lb
Pitching moment	1600 in.-lb
Yawing moment	800 in.-lb
Rolling moment	800 in.-lb
Axial force	100 lb

The maximum rated capacities for each fin balance are as follows:

Normal force	60 lb
Hinge moment	100 in.-lb
Root-bending moment	100 in.-lb

Two base pressure taps were mounted on the sting to measure base pressure. A fouling system for each fin and body was installed to indicate contact between fins and body or between body and sting.

At NASA Langley, the model was supported by NASA's 6-component strain gage balance UT-36. In addition, each fin was supported by an

independent 3-component strain gage balance calibrated by Langley. These balances are identified by MICOM drawings, RDK-12500 series, and are identical to the fin balances used in the AEDC tests.

The maximum rated capacities for the main balance (NASA UT-36) are as follows:

Normal force	100 lb
Side force	100 lb
Pitching moment	800 in.-lb
Yawing moment	200 in.-lb
Rolling moment	50 in.-lb
Axial force	60 lb

For the McDonnell Douglas test, aerodynamic loads of the complete model were measured by the McDonnell Douglas Aerophysics Laboratory No. 17 six-component strain gage balance. Aerodynamic loads for each of the four fins were measured by a MICOM 3-component fin balance. The fin balances are identified by MICOM drawing, RDK-12500 series, again the same balances used at AEDC.

Maximum rated capacities for the No. 17 balance are as follows:

Normal force	1000 lb
Side force	1000 lb
Pitching moment	300 in.-lb
Yawing moment	2500 in.-lb
Rolling moment	400 in.-lb
Axial force	150 lb

Because of the 3-component limitation of the fin balances, the normal force and the hinge moment data are inadequate for the folding fin configurations. Other tunnel instrumentation consisted of tunnel pressure and temperature transducers, two base pressure transducers, and a model grounding circuit indicating continuity between fins and body and between body and sting.

C. Model

The model consisted of a two-caliber secant ogive nose with an eight-caliber cylindrical afterbody and 21 fin configurations. The basic body configuration (B1) had a straight cylindrical afterbody four inches in diameter. Alternate afterbody shapes B2 and B3 stepped down to a diameter of 3.6 inches over lengths of 7 and 4 inches from the base, respectively (figure 1).

The basic WAF geometry is shown in figure 2, and table 4 is a listing of the geometry for the 21 fins tested. Fin F1 is the basic WAF, and all variations of fin parameters are based on this fin. B1F1 is the basic configuration and was repeated in all tests to check the agreement of the data. Refer to figures 4 and 5 for model installation photographs.

REDUCTION AND PRESENTATION OF DATA

All main balance force coefficients are referenced to the cross section of the body--12.566 in². The moments are all about the nose apex and are based on the body cross section times the body diameter. See figure 3 for the main balance sign conventions.

All basic fin force coefficients are referenced to their respective fin panel areas listed in table 4. Fin hinge moment coefficients are about the 50 percent chord line and the root bending moment coefficients are about a line parallel to the fin root chord on the body surface. Figure 3 shows the force and moment sign convention for the fin balances. Equations of transfer used in the data reduction and the data accuracy are described in the original data reports, references 1 through 6.

Data for this report were machine processed by Data Management Services (DATAMAN), Chrysler Corporation Michoud Defense-Space Division (CMDSD). Due to the amount of data involved in the six wind tunnel tests, inspection for extraneous data points was not done prior to calculation of slopes. Reference to the original source data may be required to resolve subsequent questions. A breakdown of configuration parameters available for comparison are included in table 5.

Data are presented in four sections: the main balance coefficient summary, Appendix A; the horizontal fin (fins 2 and 4) panel data, Appendix B; the fin effectiveness including opening angle, Appendix C; and the fin-body interference, Appendix D. Mach number range for the data is 0.3 to 3.0.

Configuration B1F1 is considered the basic WAF configuration and was included in all tests to check the agreement of the data from the different tests. While working with some of the data sets, it was necessary to interpolate to have identical Mach numbers.

Appendix A presents data in the form of $C_{N\alpha}$, $C_{m\alpha}$, $X_{cp\alpha}$, $CA_{f\alpha=0}$, $CA_{b\alpha=0}$, and $C_{L\alpha} = \textcircled{1}$ for all of the body-fin combinations tested. In addition, a rolling moment coefficient, $C_{L\alpha} = \textcircled{2}$ calculated from the fin balance data is presented. The fin rolling moment coefficient is computed according to the following formula:

$$C_L = B/2D \sum_{i=1}^4 CBM_{Fi} + R/D \sum_{i=1}^4 CN_{Fi}$$

- ① main balance data
- ② fin balance data

where

C_{NF_i} = fin normal force coefficient for the i^{th} fin

$C_{BM_{Fi}}$ = fin root bending moment coefficient for the i^{th} fin

Figure 3 shows the sign convention for these forces. The above calculation was made for all test data except UPWT 980, which was deleted because the fin balances were not sensitive enough for the tunnel dynamic pressures.

The side force coefficient, C_y , and the yawing moment coefficient, C_n , are not presented since no trends unique to WAFs were discovered. Refer to reference 7 for further information in this area. The variation in C_A for the same configuration in different tests show the effect of Reynolds number.

Appendix B is the fin panel data. Data consist of plots of $C_{N_{\alpha F}}$, $X_{cp_{\alpha F}}$ and $Y_{cp_{\alpha F}}$ versus Mach number for the fins. These data were measured by the individual fin balances. Comparison of the same fin on both the straight and step down body is shown. Data for three fins (F1, F2, and F9) mounted on a splitter plate (figure 4) are included in this section.

Fin effectiveness plots are in Appendix C. Fin effectiveness is determined by taking the main balance data for a body-fin combination and subtracting from it the corresponding main balance data for the body alone (datasets RT9B01 or RLX001 as appropriate).

Data for $C_{N_{\alpha FE}}$, $X_{cp_{\alpha FE}}$, and $C_{A_{\alpha=0 FE}}$ are plotted against Mach number for fins that are fully opened and versus fin opening angle for different Mach numbers and roll angles. (Figure 5 depicts fin opening angles.)

Since the main balance data are referenced to body cross section and the moments are referenced about the nose, it was necessary to change the references to fin parameters. Fin effectiveness coefficients are based on fin area, and moments are referenced about the fin 50 percent chord line. To do this, the following transformations were used:

$$C_{N_{\alpha FE}} = K[C_{N_{\alpha FB}} - C_{N_{\alpha B}}]$$

$$C_{m_{\alpha FE}} = [K(C_{m_{\alpha FB}} - C_{m_{\alpha B}}) + X_{C1} (C_{N_{\alpha FE}})] D/C_R$$

$$X_{CP_{\alpha FE}} = \frac{C_{m_{\alpha FE}}}{C_{N_{\alpha FE}}}$$

$$C_{A_{FE}} = K(C_{A_{FB}} - C_{A_B})$$

where

K is the body reference area divided by the area of two fin panels (table 4)

X_{C1} is the distance from the nose of the missile to the 50 percent chord line (Refer to X_{C1} in the nomenclature for numerical values)

$C_{N_{\alpha FE}}$, $C_{m_{\alpha FE}}$, and $X_{CP_{\alpha FE}}$ are plotted for various data. Because of Reynolds number differences, axial force coefficients from some data sets could not be subtracted to obtain $C_{A_{\alpha=0 FE}}$; these data are missing from the plots.

Appendix D consists of the upwash and carryover versus Mach number. In this section, the effects of the wing on the body and the body on the wing are separated. The following equations were used:

Upwash:

$$K_{W(B)} = C_{N_{\alpha F}} / C_{N_{\alpha SP}}$$

Total interference effects:

$$K_{W(B)} + K_{B(W)} = C_{N_{\alpha FE}} / C_{N_{\alpha SP}}$$

Carryover:

$$K_{B(W)} = (K_{W(B)} + K_{B(W)}) - K_{W(B)}$$

Upwash and carryover plots are presented only for those WAFs which have panel data obtained from the splitter plate tests (figure 4, table 1F). However, splitter plate data for F1 was used to calculate the interference effects for the fins that have the same projected planform as F1 but only vary in such parameters as thickness, fin leading edge angle, and fin leading edge symmetry.

For the difference in interference effects between straight and WAF, compare the ratios for F1 and F9. Included on both plots is the predicted lift ratio using slender body theory, reference 8.

REFERENCES

1. Dahlke, C. W., Craft, J. C., "Aerodynamic Characteristics of Wrap-around Fins Mounted on Bodies of Revolution and Their Influence on the Missile Static Stability at Mach Numbers from 0.3 to 1.3," Vols. I & II, U. S. Army Missile Command, Redstone Arsenal, Alabama, RD-TM-72-1, April 1972.
2. Dahlke, C. W., "Static Aerodynamic Stability Characteristics of a Body of Revolution with Wraparound Fins at Mach Numbers from 0.5

- to 1.3," U. S. Army Missile Command, Redstone Arsenal, Alabama, RD-TM-72-6, June 1972.
3. Dahlke, C. W., Craft, J. C., "Static Aerodynamic Stability Characteristics of Bodies of Revolution with Wraparound Fins at Mach Numbers from 1.6 to 2.86," U. S. Army Missile Command, Redstone Arsenal, Alabama, RD-TM-72-14, September 1972.
 4. Craft, J. C., Skorupski, Jeff, "Static Aerodynamic Stability Characteristics of Munitions Designs at Transonic Mach Numbers," U. S. Army Missile Command, Redstone Arsenal, Alabama, RD-73-3, February 1973.
 5. Dahlke, C. W., Flowers, L. D., "The Aerodynamic Characteristics of Wrap-Around Fins, Including Fold Angle at Mach Numbers From 0.5 to 3.0," U. S. Army Missile Command, Redstone Arsenal, Alabama, RD-75-15, November 1974.
 6. Dahlke, C. W., Flowers, L. D., "The Aerodynamic Characteristics of Wrap-Around Fins, Including Fold Angle, At Mach Numbers From 0.5 to 13," U. S. Army Missile Command, Redstone Arsenal, Alabama, RD-75-19, December 1975.
 7. Dahlke, C. W., "The Aerodynamic Characteristics of Wrap-Around Fins at Mach Numbers of 0.3 to 3.0," U. S. Army Missile Command, Redstone, Arsenal, Alabama, RD-77-4, 15 October 1976.
 8. Pitts, W. C., Nielsen, J. N., Kaattari, G. E., "Lift and Center of Pressure of Wing-Body-Tail Combinations at Subsonic, Transonic, and Supersonic Speeds", NACA Report 1307.

NOMENCLATURE

<u>SYMBOL</u>	<u>MNEMONIC</u>	<u>DEFINITION</u>
<u>REFERENCE & GENERAL DEFINITIONS</u>		
RN	RN	unit Reynolds number; per ft
V		velocity; ft/sec
α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
ϕ	PHI	angle of roll, degrees
ρ		mass density; slugs/ft ³
a		speed of sound; ft/sec
C _p	CP	pressure coefficient; $(p_1 - p_\infty)/q$
M	MACH	Mach number; V/a
q		dynamic pressure; $1/2\rho V^2$
p _b /p		base pressure ratio
b	BREF	reference span; in.
c.g.		center of gravity
ℓ _{REF}	LREF	reference length, in.
P _t	PT,PTOTAL	wind tunnel stagnation pressure
S, S _{ref} , A _{ref}	SREF	reference area used to reduce data to coefficient form, in.
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis
α_i		fin initial incidence angle for splitter plate test, degrees

NOMENCLATURE (Continued)

<u>SYMBOL</u>	<u>MNEMONIC</u>	<u>DEFINITION</u>
<u>MAIN BALANCE DEFINITIONS</u>		
C_N	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
C_A	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS^2_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$
C_{ℓ}	CBL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$
$C_{m_{\alpha}}$	CLMALF	pitching moment coefficient derivative with respect to angle of attack, per degree
$C_{N_{\alpha}}$	CNALFA	normal force coefficient derivative with respect to angle of attack, per degree
C_{A_b}	CAB	base axial force coefficient
C_{A_f}	CAF	forebody axial force coefficient; $C_{A_f} = C_A - C_{A_b}$
$C_{A_f_{\alpha=0}}$	CAFAFO	forebody axial force coefficient at zero angle of attack
$C_{A_b_{\alpha=0}}$	CABAFO	base axial force coefficient at zero angle of attack
$C_{\ell_{\alpha=0}}$	CBLAFO	rolling moment coefficient at zero angle of attack

NOMENCLATURE (Continued)

<u>SYMBOL</u>	<u>MNEMONIC</u>	<u>DEFINITION</u>
x_{cp_α}	XCPB	ratio of pitching moment derivative with respect to angle of attack to normal force derivative with respect to angle of attack, CLMALF/CNALFA
<u>FIN DEFINITIONS *</u>		
$C_{N_{Fi}}$	CNFi	fin normal force coefficient; $\frac{\text{fin normal force}}{qS_{ref}}$
$C_{M_{Fi}}$	CLMHi	fin hinge moment coefficient; $\frac{\text{fin hinge moment}}{qS_{ref} l_{ref}}$
$C_{B_{Fi}}$	CLMRi	fin root bending moment coefficient; $\frac{\text{fin root bending moment}}{qS_{ref} l_{ref}}$
$C_{N_{\alpha f}}$	CNF	fin normal force coefficient derivative with alpha, per degree
$x_{cp_{\alpha f}}$	XCPF	derivative of chordwise center of pressure, positive forward of 50 percent chord line with respect to angle of attack
$y_{cp_{\alpha f}}$	YCPF	derivative of spanwise center of pressure outboard of body surface with respect to angle of attack
$C_{N_{\alpha sp}}$	CNFSP	fin normal force coefficient with respect to angle of attack for splitter plate test data
$C_{l_{\alpha=0}}$	CBLAFO	rolling moment coefficient at alpha = 0° based on summation of fin balance data, defined in text

* Fin forces and moments axis system remain fixed relative to fin balance regardless of fin fold angle, but roll with model.

NOMENCLATURE (Continued)

<u>SYMBOL</u>	<u>MNEMONIC</u>	<u>DEFINITION</u>
<u>BODY & FIN COMBINATION DEFINITIONS</u>		
$C_{N_{\alpha FE}}$	CNAFE	fin normal force effectiveness coefficient derivative with respect to angle of attack; $C_{N_{\alpha FE}} = K [C_{N_{\alpha FB}} - C_{N_{\alpha B}}]$
$C_{m_{\alpha FE}}$	CMAFE	fin pitching moment effectiveness coefficient derivative with respect to angle of attack; $C_{m_{\alpha FE}} = [K(C_{m_{\alpha FB}} - C_{m_{\alpha B}}) + X_{c1}(C_{N_{\alpha FE}})]D/CR$
$C_{N_{\alpha FB}}$	CNAFB	normal force coefficient derivative with respect to angle of attack for body with fin configurations, per degree
$C_{N_{\alpha B}}$	CNAB	normal force coefficient derivative with respect to angle of attack for body alone configuration, per degree
$C_{m_{\alpha FB}}$	CMAFB	pitching moment coefficient derivative with respect to angle of attack for body with fin configuration, per degree
$C_{m_{\alpha B}}$	CMAB	pitching moment coefficient derivative with respect to angle of attack for body alone configuration, per degree
$C_{A_{FB}}$	CAFB	axial force coefficient for body with fin configuration
C_{A_B}	CAB	axial force coefficient for body alone configuration
$C_{A_{FE}}$	CAFE	axial force effectiveness coefficient; $C_{A_{FE}} = K (C_{A_{FB}} - C_{A_B})$
$C_{A_{\alpha=0FE}}$	CAFOFE	axial force effectiveness coefficient at zero angle of attack

NOMENCLATURE (Continued)

<u>SYMBOL</u>	<u>MNEMONIC</u>	<u>DEFINITION</u>
$x_{cp\alpha_{FE}}$	XCPFE	longitudinal center of pressure effective- ness coefficient derivative; $x_{cp\alpha_{FE}} = C_{m\alpha_{FE}}/C_{N\alpha_{FE}}$
$K_{W(B)}$	KWB	fin-body interference factor of fins in presence of body; $K_{W(B)} = C_{N\alpha_F}/C_{N\alpha_{SP}}$
$K_{B(W)}$	KBW	fin-body interference factor of body in presence of fins; $K_{B(W)} = C_{N\alpha_{FE}}/C_{N\alpha_{SP}} - C_{N\alpha_F}/C_{N\alpha_{SP}}$

GEOMETRIC DEFINITIONS

S_f		fin panel area, in ²
C_R	CR	fin root chord length, in
C_T	CT	fin tip chord length, in
t	T	fin thickness, in
AR	AR	fin aspect ratio
$b/2$	B/2	fin exposed semi span, in
$b/2D$	B/2D	fin exposed semi span to body diameter ratio
D		missile body diameter, 4.0 in
R		missile body radius, in
Λ	LAMBDA	fin leading edge sweep angle, degrees
C_T/C_R	CT/CR	fin tip chord to root chord ratio
C/D	C/D	fin root chord to missile diameter ratio

NOMENCLATURE (Concluded)

<u>SYMBOL</u>	<u>MNEMONIC</u>	<u>DEFINITION</u>
A		distance from center of missile to fin attach point
R_1		fin mean radius, in
R_2		fin outer radius, in
R_3		fin inner radius, in
r		fin leading edge radius, in
δ	DELTA	fin leading edge angle, degrees
θ	THETA	fin opening/closing angle, $\theta = 0^\circ$ = fully open, degrees
t/C _R	T/C	fin thickness to chord ratio
K		ratio of missile cross sectional area (12.566 in ²) to area of 2 fin panels (fins in radial position 2 and 4)
X_{c1}		distance from the nose to the 50 percent chord line, 9.125 calibers for 1.75 caliber fins, 9.5 calibers for 1.0 caliber fins, and 9.75 calibers for 0.5 caliber fins
	PANEL	parameter name to denote radial fin positions 1, 2, 3, and 4
<u>SUBSCRIPTS</u>		
b		base
l		local
s		static conditions
t		total conditions
∞		free stream
i		fin radial position about body, i = 1, 2, 3, and 4
B		body alone
F		fin
FB		fin body combination
FE		fin effectiveness, FB-B

TABLE 1A. COLLATION SUMMARY--AEDC TC154/170

DATA SET IDENTIFIER	CONFIGURATION	SCHD. PARAMETERS/VALUES				NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS				
		α	β	ϕ	P_t		0.3	0.5	0.8	0.95	1.00	1.05	1.10	1.20	1.30						
KT9B01	B1	A	0	0	2.6*			4	5	8	9	10	11	17	16	18					
02	↓	A	0	0	1.1				21				20		19						
03		B	0	90	2.6				6				12		15						
04	↓	B	0	180	2.6				7				13		14						
08	B1F1	A	0	0	2.6			61	66	67	70	71	74	75	247	248					
09	↓	A	0	45	2.6				65	68	69	72	73	76	77						
10	↓	A	0	0	1.1				246				93		94						
11	↓	A	0	45	1.1								92		95						
12	↓	A	0	90	1.1				88				91		96						
13	↓	A	0	180	1.1				89				90		97						
86	↓	0	0	C	2.6								104		103						
87	↓	1.5	0	C	2.6								105		100						
88	↓	3.0	0	C	2.6				107				106		99						
92	B1F2	A	0	0	2.6				426	430			431		434	435					
20	↓	A	0	90	2.6				427	428			432		433	436					
17	↓	A	0	0	2.0			135	138	139	140	141	150	149	146	144					
↓ 18	↓	A	0	22.5	2.0				137				151		147						

* $P_t = 2.6 \times 10^3$ (psfa)

$\alpha A = \pm 6, \pm 5, \pm 4, \pm 3, \pm 2, \pm 1.5, \pm 1.0, \pm 0.75, \pm 0.5, \pm 0.25, 0$
 $\alpha B = \pm 3, \pm 2, \pm 1.5, \pm 1.0, \pm 0.75, \pm 0.5, \pm 0.25, 0$

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TABLE 1A. (Continued)

DATA SET IDENTIFIER	CONFIGURATION	SCHD. PARAMETERS/VALUES				NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		α	β	PARAMETERS/VALUES			0.3	0.5	0.8	0.95	1.00	1.05	1.10	1.20	1.30	14	15	16	31	32	33	34	35	36	37	38	45	46	05	51	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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$$*P_t = 2.6 \times 10^3$$

TABLE 1A. (Continued)

DATA SET IDENTIFIER		CONFIGURATION	SCHD. PARAMETERS/VALUES				NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES			NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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TABLE 1A. (Concluded)

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TABLE 1B. COLLATION SUMMARY--AEDC TC 202

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		Control Deflection				NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)							TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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 $\alpha A = \pm 6, \pm 5, \pm 4, \pm 3, \pm 2, \pm 1.5, \pm 1.0, \pm 0.50, \pm 0.25, 0$ $\beta \checkmark =$ variable with α

TABLE 1C. COLLATION SUMMARY --LaRC UPWT -980

DATA SET IDENTIFIER	CONFIGURATION	SCHD. PARAMETERS/VALUES			NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)							TEST RUN NUMBERS									
		α	β	ϕ		1.6	1.9	2.36	2.86													
RLX001	B1	A	0	0																		
02	B1 F1	A	0	0																		
03	B1 F1	A	0	22.5																		
04	B1 F1	A	0	45.0																		
05	B1 F2	A	0	0																		
06	B1 F2	A	0	45																		
07	B1 F6	A	0	0																		
08	B1 F6	A	0	22.5																		
09	B1 F6	A	0	45																		
10	B1 F7	A	0	0																		
11	B1 F7	A	0	22.5																		
12	B1 F7	A	0	45.0																		
13	B1 F9	A	0	0																		
14	B1 F9	A	0	22.5																		
15	B1 F9	A	0	45.0																		
16	B1 F13	A	0	0																		
17	B1 F13	A	0	22.5																		

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A) -6, -4, -2, -1, -.5, 0, .5, 1, 2, 4, 6°

TABLE 1C. (Concluded)

[illegible]

TABLE 1D. COLLATION SUMMARY--AEDC TC 273

DATA SET IDENTIFIER	CONFIGURATION	SCHD.				PARAMETERS/VALUES				NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
		SCHD.		PARAMETERS/VALUES		NO.		MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)			MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
		α	β	ϕ	CR	Δ	θ	0.5	0.6	0.8	0.9	0.95	1.0	1.05	1.1	1.2	1.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

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$\alpha A: -7^\circ \rightarrow 14^\circ$; $\alpha B: -7^\circ \rightarrow 6^\circ$; $\alpha C: -5^\circ \rightarrow 27^\circ$

SCHEDULES

TABLE 1D. (Continued)

DATA SET IDENTIFIER		CONFIGURATION	SCHD.				PARAMETERS/VALUES				NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)										TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
			A		B		C	D	E	F		G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
			1	2	3	4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
RXCB18		B1F1	A	0	0	0	7	0	45	10	78	88	89	96	99	106	107	114	115	122																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

TEST RUN NUMBERS

TYPE OF DATA
A OR B
SCHEDULES

TABLE 1D. (Concluded)

[illegible]

TABLE 1E. COLLATION SUMMARY--MDAC S-256

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)														TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		α	β	ϕ	Λ			0.5	0.8	0.95	1.0	1.1	1.2	1.3	1.6	2.0	2.5	3.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

TYPE OF DATA

α OR β

SCHEDULES

α Schedule A = -9° to 9°

TABLE 1E. (Continued)

DATA SET IDENTIFIER	CONFIGURATION	SCHD.			Para./Values			MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)																TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		α	β	θ	φ	θ	0.7	0.5	0.8	0.95	1.0	1.1	1.2	1.3	1.6	2.0	2.5	3.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

2043 2049

TYPE OF DATA

A OF B

SCHEDULES

TABLE 1E. (Concluded)

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)											TEST RUN NUMBERS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		α	β	ϕ	θ	RN			0.8	0.95	1.0	1.1	1.2	1.3	1.6	2.0	2.5	3.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

TYPE OF DATA

α OF β

SCHEDULES

ϕ Schedule B = 0 \rightarrow 90

TABLE 1F. COLLATION SUMMARY--AEDC TC 2-19 (SPLITTER PLATE)

[illegible]

TABLE 2. SUMMARY OF WAF STATIC TEST

CONFIGURATION	0.3	0.5	0.6	0.7	0.8	0.9	0.95	1.0	1.05	1.1	1.2	1.3	1.6	1.9	2.0	2.36	2.5	2.86	3.0
B1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F9	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F10	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F11	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F12	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F13	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F14	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F16	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F17	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F18	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F19	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B1F21	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B2F1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B2F10	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B2F13	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B3F2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
B3F16	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

○ TC 154/170 (REF 2) ◇ UPWT 980 (REF 7)
 □ TC202 (REF 5) △ TC 273 (REF 3)
 ◻ S-256 (REF 8) ● SOLID SYMBOLS: ZERO ROLL ANGLE ONLY

TABLE 3. SUMMARY OF TEST CONDITIONS

LaRC 4-FOOT UNITARY PLAN WIND TUNNEL				
MACH	$T_t(^{\circ}\text{F})$	$P_t(\text{psfa})$	$R_N \times 10^{-6}/\text{FT}$	
1.6	150	1666	3.0	
1.9	150	1907	3.0	
2.36	150	2369	3.0	
2.86	150	3084	3.0	
All tests were performed with transition strips of No. 40 sand affixed 1.2 inches aft of the nose apex and 0.40 inch aft of the leading edge on the fin surfaces. Schlieren photographs were taken to confirm the existence of a turbulent boundary layer.				
McDONNELL DOUGLAS AEROPHYSICS LABORATORY 4-FOOT TRANSONIC WIND TUNNEL				
MACH	$T_t(^{\circ}\text{F})$	$P_t(\text{psia})$	$R_N \times 10^{-6}/\text{FT}$	$q(\text{psi})$
0.5	61.3	32.35	7.0	4.51
0.8	68	23.94	7.0	6.935
0.95	65	22.3	7.0	7.8
1.0	65.12	22.0	7.0	8.03
1.1	65.35	21.35	7.0	8.31
1.2	44	21.94	7.0	9.16
1.3	50.2	24	7.0	10.25
1.6	67.75	22.7	7.0	9.41
2.0	69.3	26.135	7.0	9.235
2.5	61.9	32.35	7.0	8.375
3.0	57	41.5	7.0	7.15
AEDC 4T PROPULSION WIND TUNNEL				
MACH	$T_t(^{\circ}\text{F})$	$P_t(\text{psfa})$	$R_N \times 10^{-6}/\text{FT}$	$q(\text{psf})$
0.5	115 + 15	2600	3.6	384
0.6	115 + 15	2600	3.8	514
0.8	115 + 15	2600	5.0	764
0.9	115 + 15	2600	5.0	872
0.95	115 + 15	2600	5.1	916
1.00	115 + 15	2600	5.2	965
1.05	115 + 15	2600	5.2	1000
1.10	115 + 15	2600	5.2	1030
1.20	115 + 15	2600	5.2	1080
1.30	115 + 15	2600	5.2	1110

TABLE 4. FIN CONFIGURATION SUMMARY

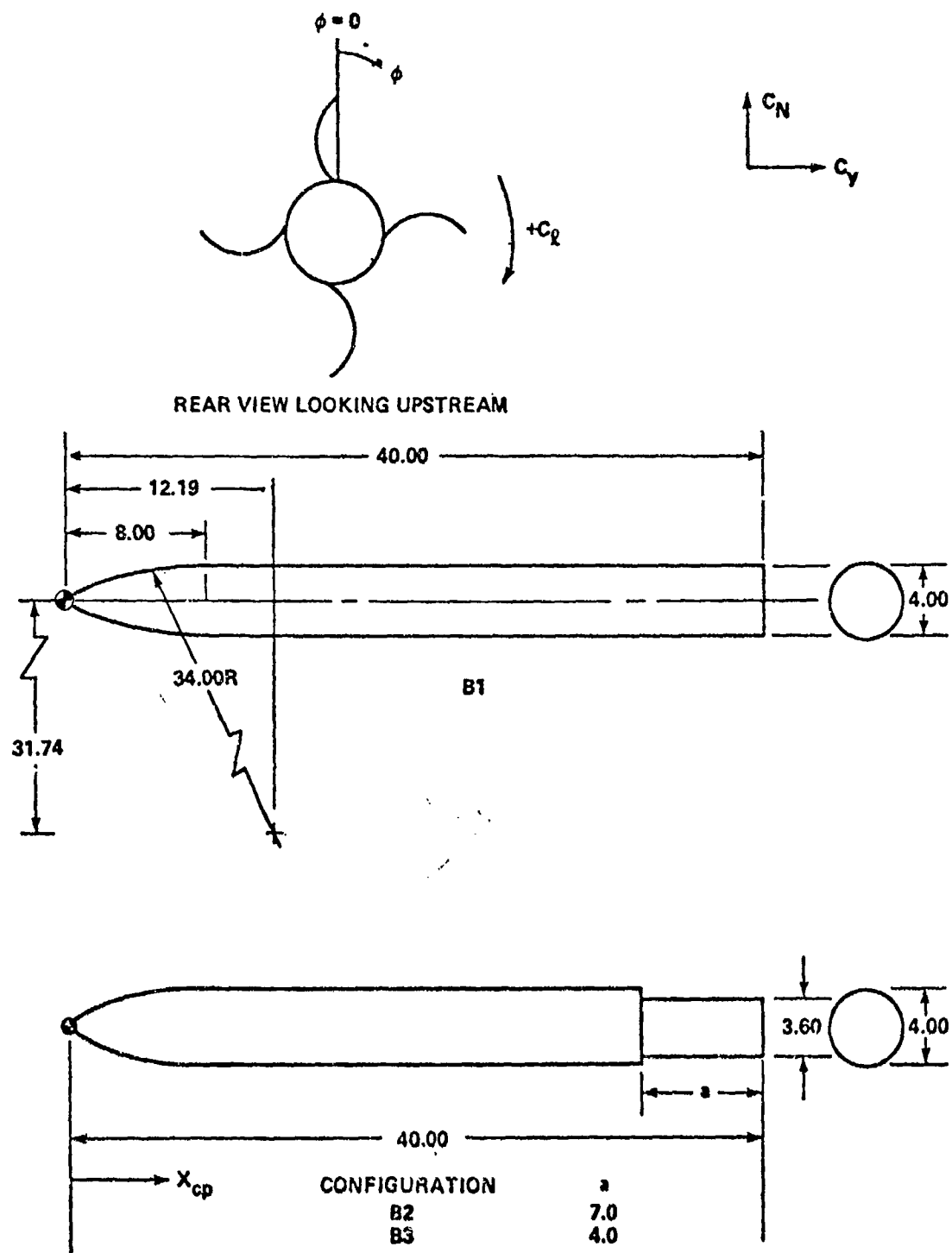
Configuration	A (in.)	C_R (in.)	$\frac{C_T}{C_R}$	Λ (deg)	t (in.)	R_1 (in.)	R_2 (in.)	R_3 (in.)	δ^* (deg)	r (in.)	AR	$b/2$ (in.)	S_f (in ²)
F1	1.900	7.0	1.00	0	0.200	1.900	2.000	1.800	45	0.008	0.75	2.64	18.48
F2	↔	4.0	↔	↔	0.114	↔	1.957	1.843	↔	↔	1.30	2.60	10.40
F3	↔	2.0	↔	↔	0.057	↔	1.929	1.871	45	↔	2.60	2.60	5.20
F4	↔	7.0	↔	↔	0.200	↔	2.000	1.800	①	↔	0.76	2.64	18.48
F5	↔	↔	↔	↔	↔	↔	↔	↔	20	↔	0.76	2.64	18.48
F6	↔	↔	↔	↔	0.200	↔	2.000	1.800	②	↔	0.76	2.64	18.48
F7	↔	↔	↔	↔	0.107	↔	1.953	1.847	45	↔	0.76	2.64	18.48
F8	1.900	↔	↔	↔	0.315	③	2.058	1.743	↔	↔	0.76	2.64	18.48
F9	2.000	↔	↔	↔	0.200	↔	2.058	1.743	↔	↔	0.75	2.64	18.41
F10 ④	1.900	7.0	1.00	0	↔	1.900	2.000	1.800	↔	↔	0.73	2.44	17.08
F11	Fin "F1" with tip chord modified												
F12	1.900	7.0	0.9	14.75	↔	1.900	2.000	↔	↔	↔	0.79	2.63	17.70
F13	↔	↔	0.75	33.9	↔	↔	↔	↔	↔	↔	0.86	2.63	16.29
F14	↔	7.0	0.60	46.9	0.200	1.900	2.000	1.800	↔	↔	0.94	2.63	14.89
F15	↔	4.0	1.00	0	0.040	1.880	1.900	1.860	↔	↔	1.32	2.65	10.64
F16	↔	4.0	0.75	20.6	0.114	1.900	2.000	1.800	↔	↔	1.54	2.70	9.45
F17	↔	7.0	0.36	60.0	0.200	↔	↔	↔	↔	↔	1.11	2.63	12.52
F18	↔	4.0	0.33	46.9	0.120	↔	↔	↔	↔	↔	1.97	2.61	6.92
F19	↔	4.0	0.00	57.3	0.120	↔	↔	↔	↔	↔	2.55	2.55	5.10
F20	↔	7.0	1.00	0	0.200	↔	↔	↔	↔	↔	0.61	2.14	14.98
F21	1.900	7.0	1.00	0	0.200	1.900	2.000	1.800	45	0.008	0.40	1.39	9.73

*Leading edge angle. All trailing edges $\delta = 45^\circ$.

- ① Blunt leading edge.
- ② Unsymmetrical leading edge.
- ③ Rectangular flat planform, exposed span = 2.658 in.
- ④ Gap fin.
- ⑤ Tip chord parallel to root chord.

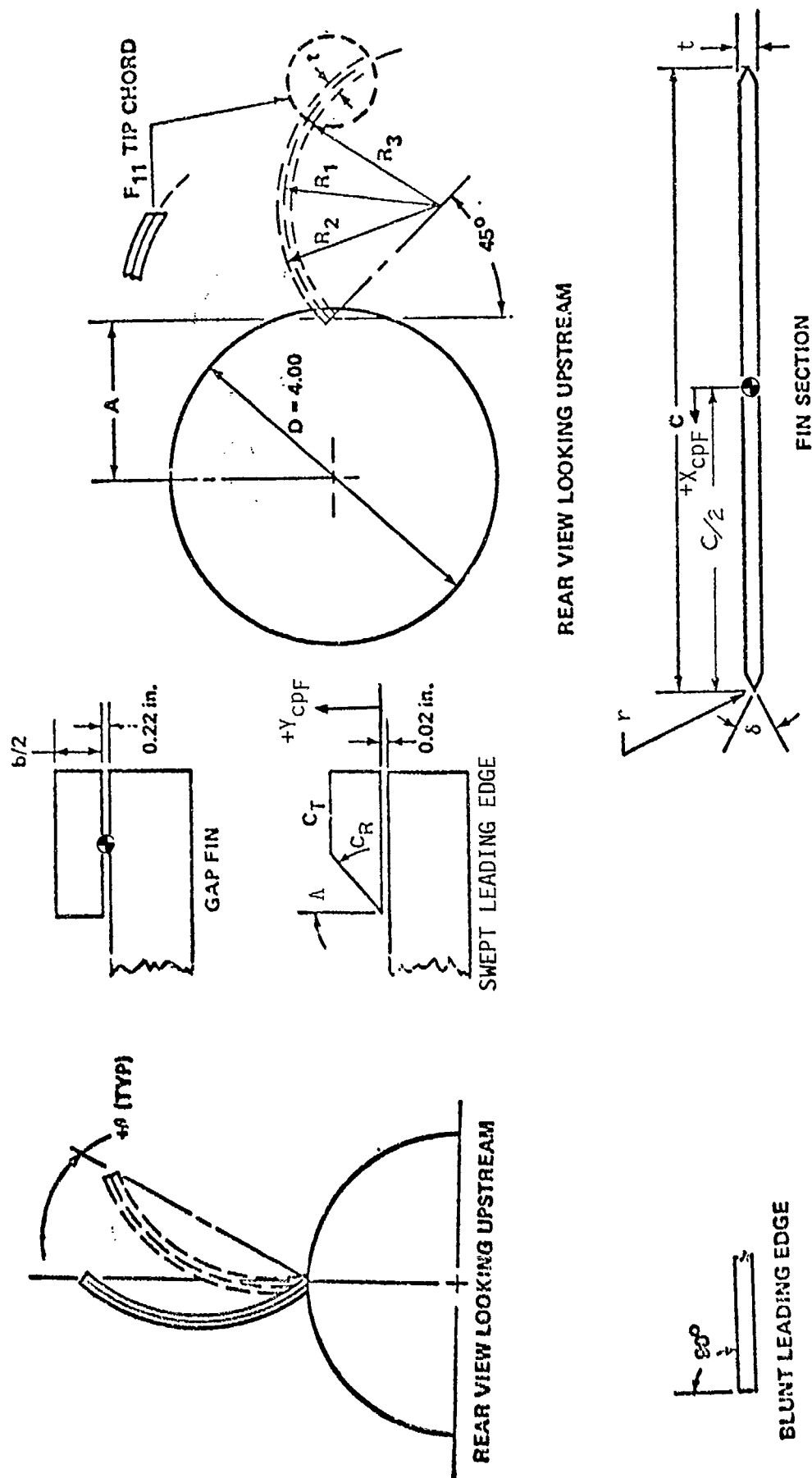
TABLE 5. BREAKDOWN OF PARAMETER COMPARISONS *

COMPARISON	CONFIGURATIONS
1. STEP DOWN BODY	B1F1, B2F1, B3F1
2. FIN THICKNESS TO ROOT CHORD RATIO, T/C	F1, F7, F8, F15
3. ASPECT RATIO, AR	
A. LEADING EDGE ANGLE, DELTA	F1, F4, F5, F6
B. FIN ROOT CHORD TO MISSILE DIAMETER RATIO, C/D	F1, F2, F3
C. SEMISPAN, B/2	F1, F20, F21
4. TIP CHORD MODIFICATION	F1, F11
5. GAP FIN	F1, F10
6. LEADING EDGE SWEEP, LAMBDA	$C_R = 7.0$ IN, F1, F12, F13, F14, F17 $C_R = 4.0$ IN, F2, F16, F18, F19
7. OPENING ANGLE EFFECTS	F1, $\theta = -10, 0, 10, 22.5, 45, 90, 112.5$, APPENDIX C
* SEE TABLE 4 FOR FIN GEOMETRY	



ALL DIMENSIONS IN INCHES.
 ⊕ Moment Reference Location for
 Main Balance Coefficients
 (Appendix A)

FIGURE 1. EXTERNAL BODY GEOMETRY



● Moment Reference Location for All Fin Coefficients (Appendices B and C)

FIGURE 2. WAF GEOMETRY

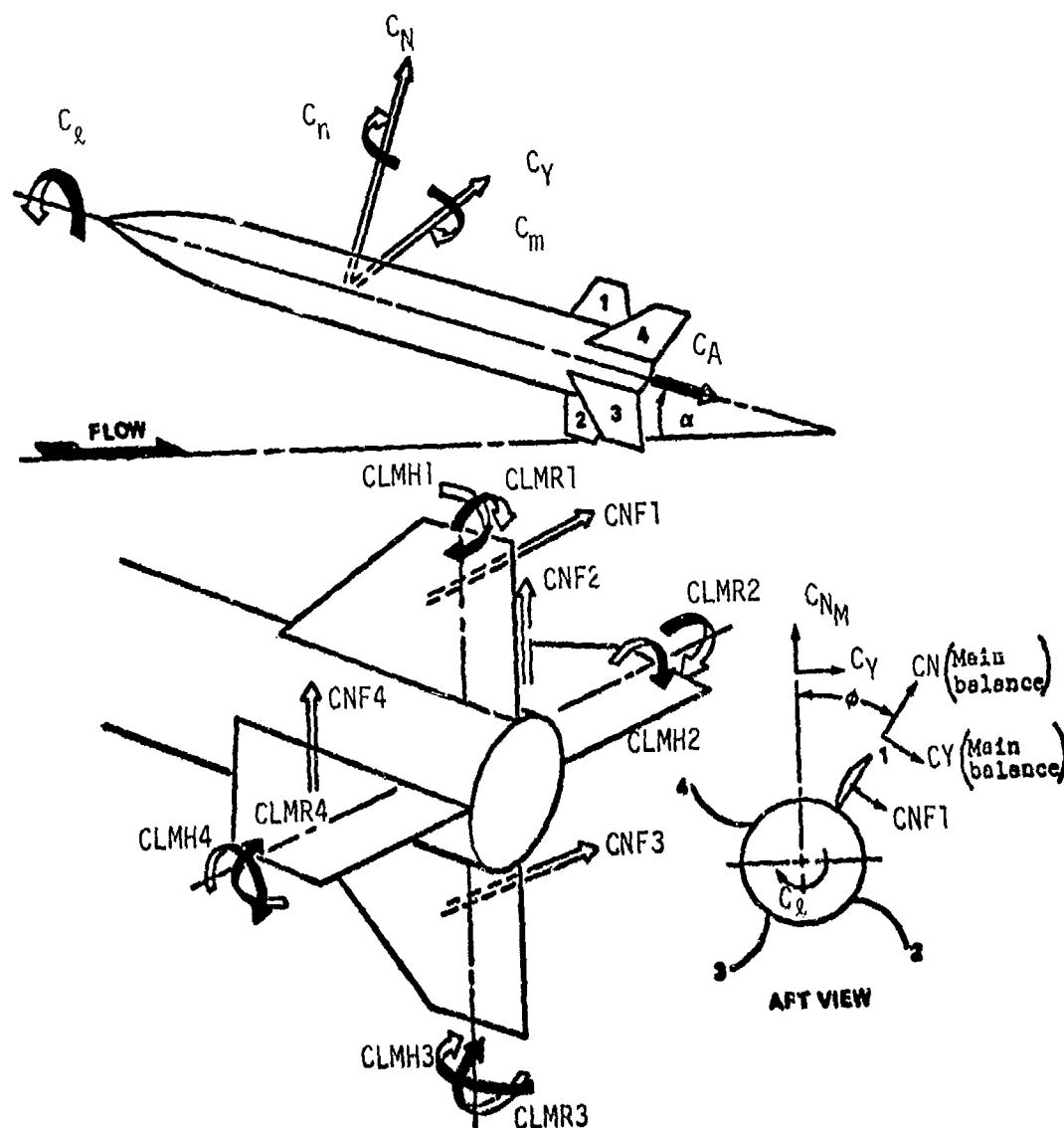
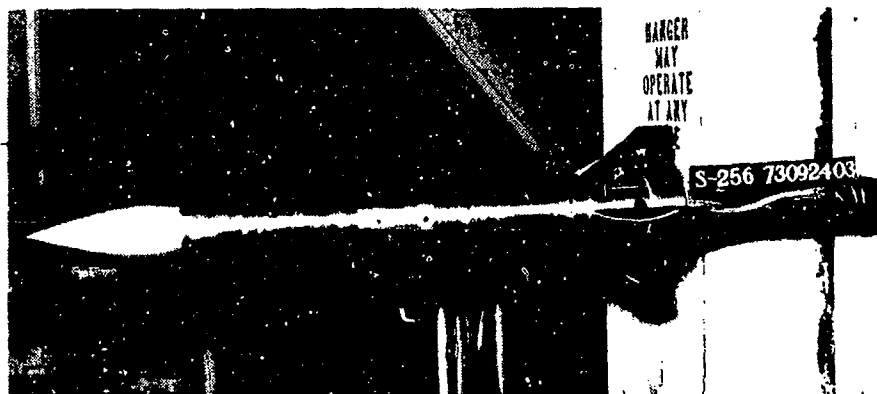
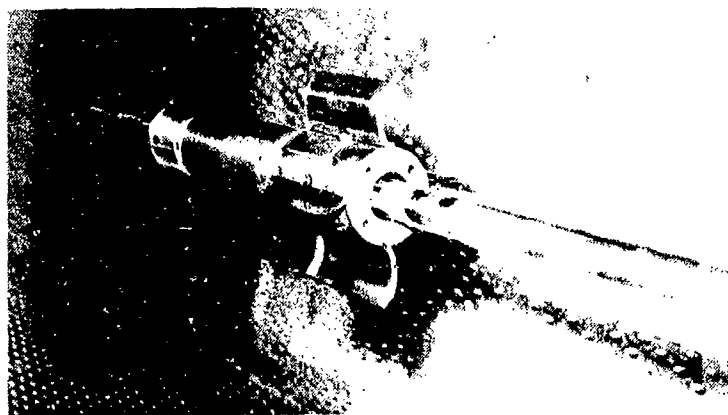


FIGURE 3. SIGN CONVENTION



MODEL INSTALLATION STANDARD CONFIGURATION, $\phi = 0$, $\alpha = 0$



SWEPT FIN CONFIGURATION



SPLITTER PLATE

Figure 4. WAF model.

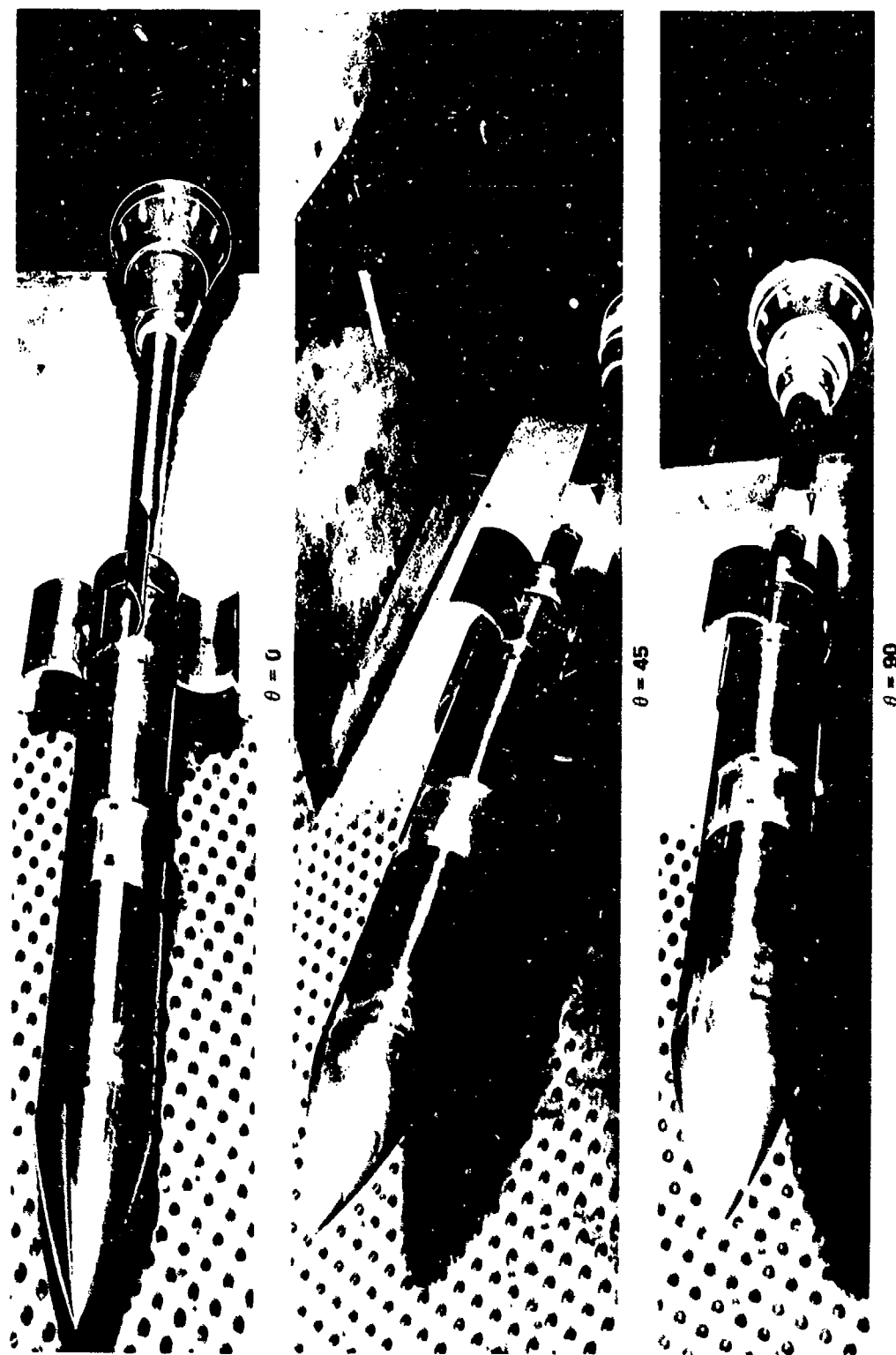


FIGURE 5. WAF MODEL WITH OPENING ANGLE VARIATION

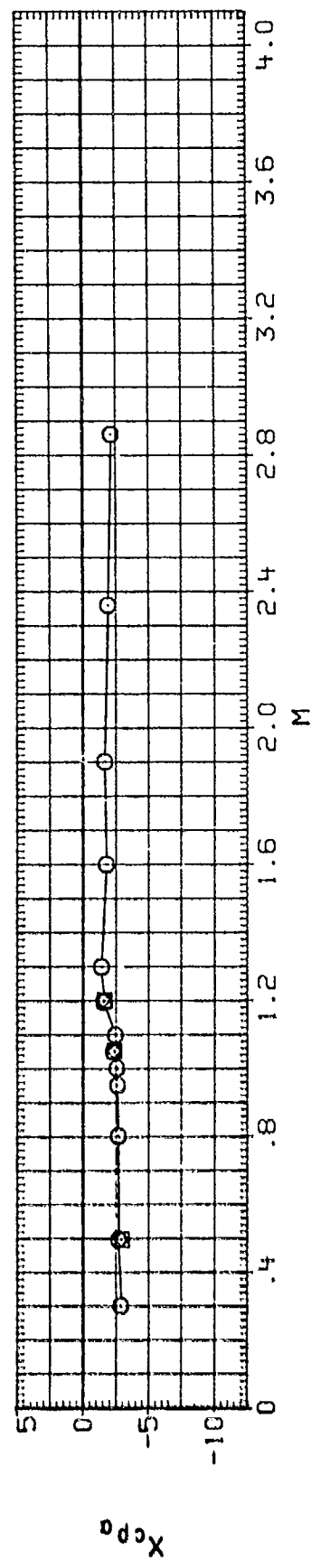
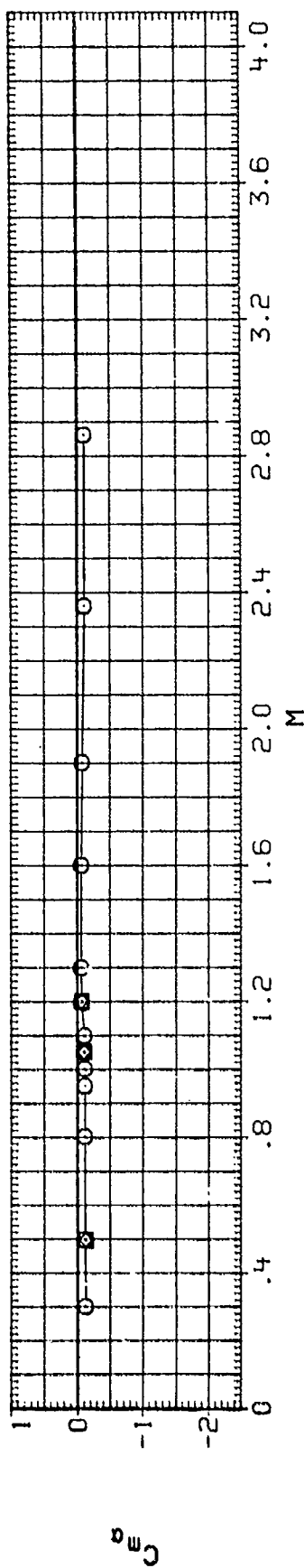
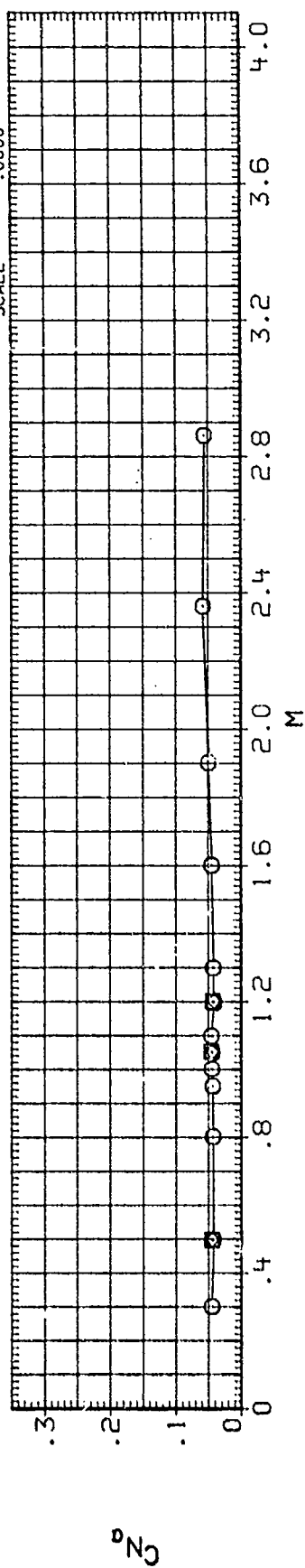
PLOTTED DATA APPENDIX A.

MAIN BALANCE COEFFICIENT SUMMARY

<u>CONFIGURATION</u>	<u>PAGE</u>
B1	1-3
B1F1	4-9
B1F2	10-12
B1F3	13-16
B1F4	17-19
B1F5	20-22
B1F6	23-25
B1F7	26-28
B1F8	29-31
B1F9	32-35
B1F10	36-38
B1F11	39-41
B1F12	42-44
B1F13	45-47
B1F14	48-50
B1F15	51-53
B1F16	54-56
B1F17	57-60
B1F18	61-63
B1F19	64-66
B1F20	67-69
B1F21	70-72
B2	73-75
B2F1	76-79
B2F10	80-82
B2F13	83-85
B3F2	86-89
B3F16	90-92
B1F1, REYNOLDS NO.	93-95
B1F2, REYNOLDS NO.	96-98
B1F10, REYNOLDS NO.	99-101
B2F1, REYNOLDS NO.	102-104
B2F10, REYNOLDS NO.	105-107

Tabulations of the plotted data and corresponding source data are available from Data Management Services Operations.

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	REFERENCE INFORMATION
(DT9801)	○	AEDC-TC154/170.AFATL FIN STUDY	.000	SREF 12.5650 SQ. IN.
(CT9803)	□	AEDC-TC154/170.AFATL FIN STUDY	90.000	LREF 4.0000 INCHES
(CT9804)	◇	AEDC-TC154/170.AFATL FIN STUDY	180.000	BREF 4.0000 INCHES
				YMRP .0000 INCHES
				ZMRP .0000 INCHES
				SCALE .0000

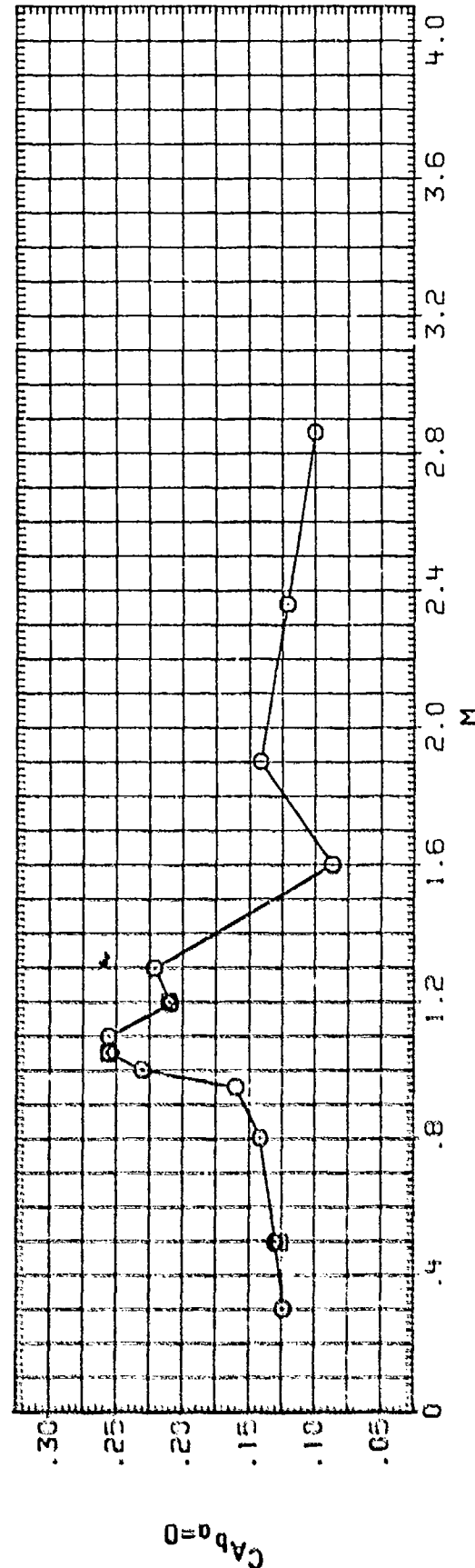
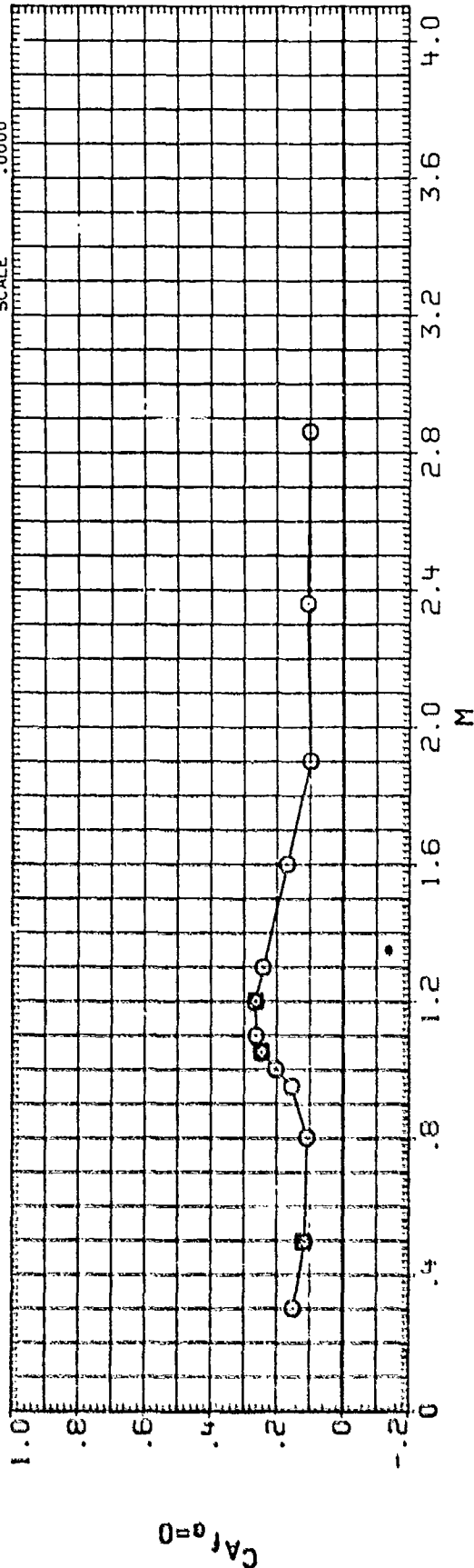


DATA SET SYMBOL CONFIGURATION DESCRIPTION

(D19B31) O AEDC-TC154/170, AFATL F IN STUDY B1 ALONE
(C19B33) □ AEDC-TC154/170, AFATL F IN STUDY B1 ALONE
(C19B34) ◇ AEDC-TC154/170, AFATL F IN STUDY B1 ALONE

PHI
.000
90.000
180.000

REFERENCE INFORMATION
SREF 12.5660 SQ. IN.
LREF 4.0000 INCHES
BREF 4.0000 INCHES
XMRP .0000 INCHES
YMRP .0000 INCHES
ZMRP .0000 INCHES
SCALE .0000



DATA SET SYMBOL

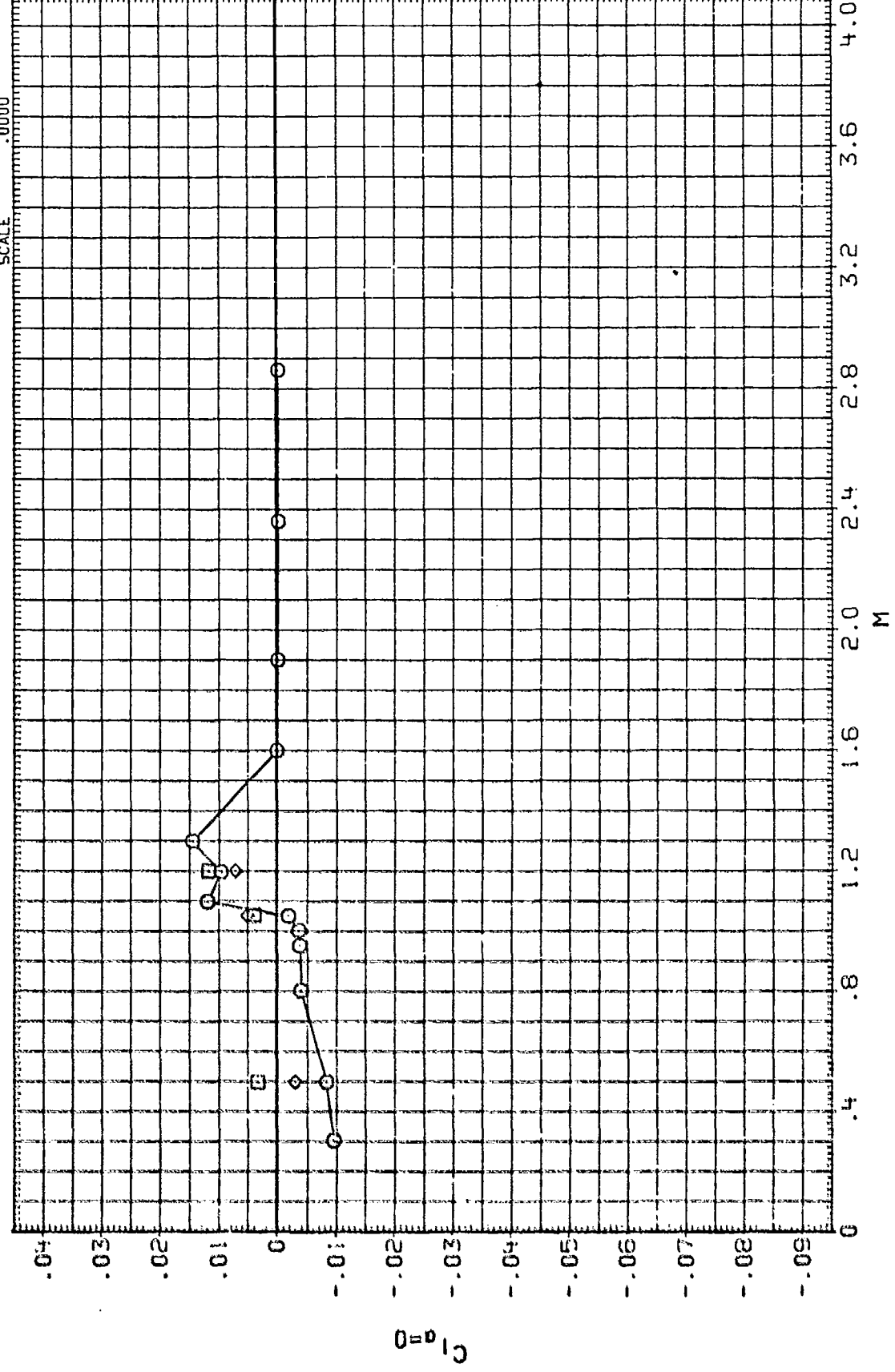
CONFIGURATION DESCRIPTION

BI ALONE

PHI

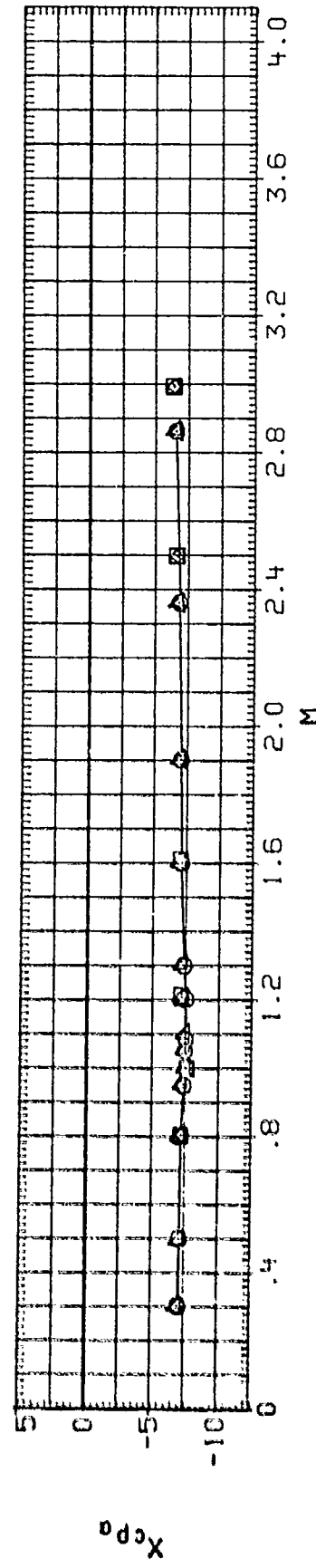
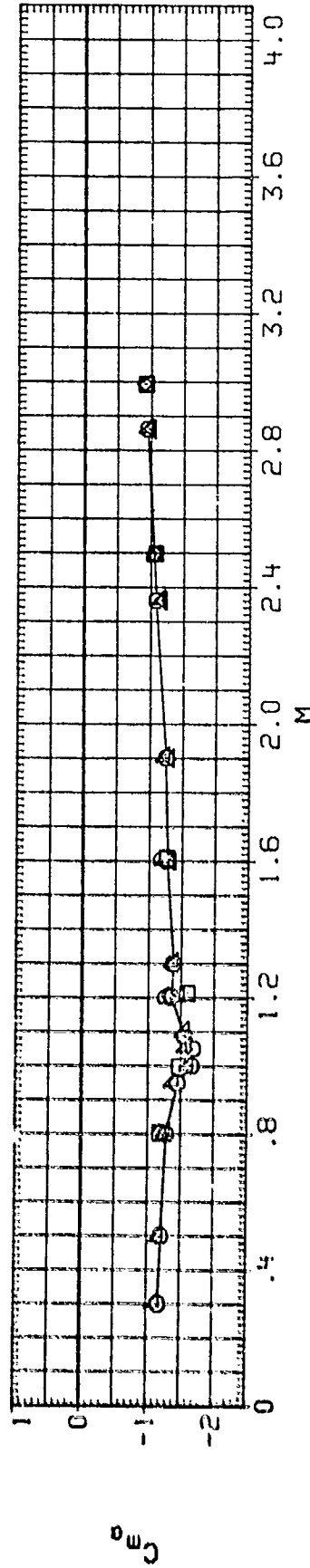
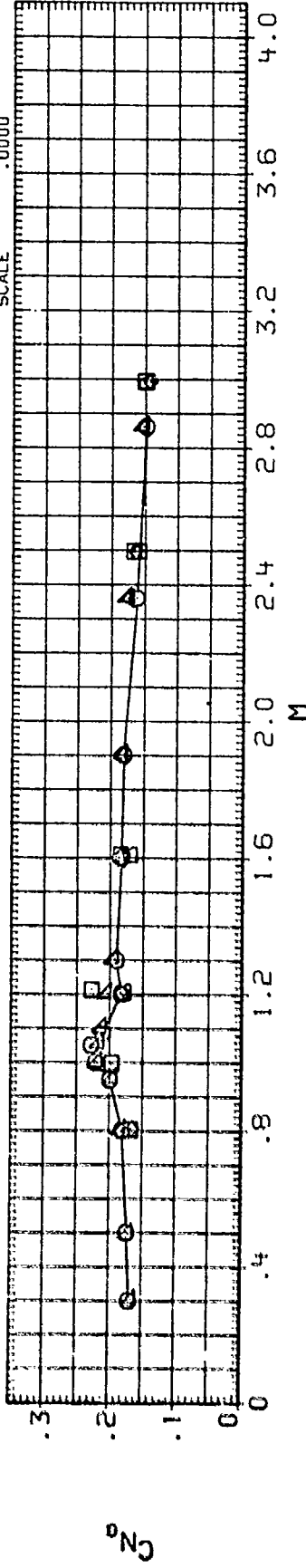
REFERENCE INFORMATION

SREF 12.5660 SQ. IN.
LREF 4.0000 INCHES
BREF 4.0000 INCHES
XMRP .0000 INCHES
YMRP .0000 INCHES
ZMRP .0000 INCHES
SCALE .0000



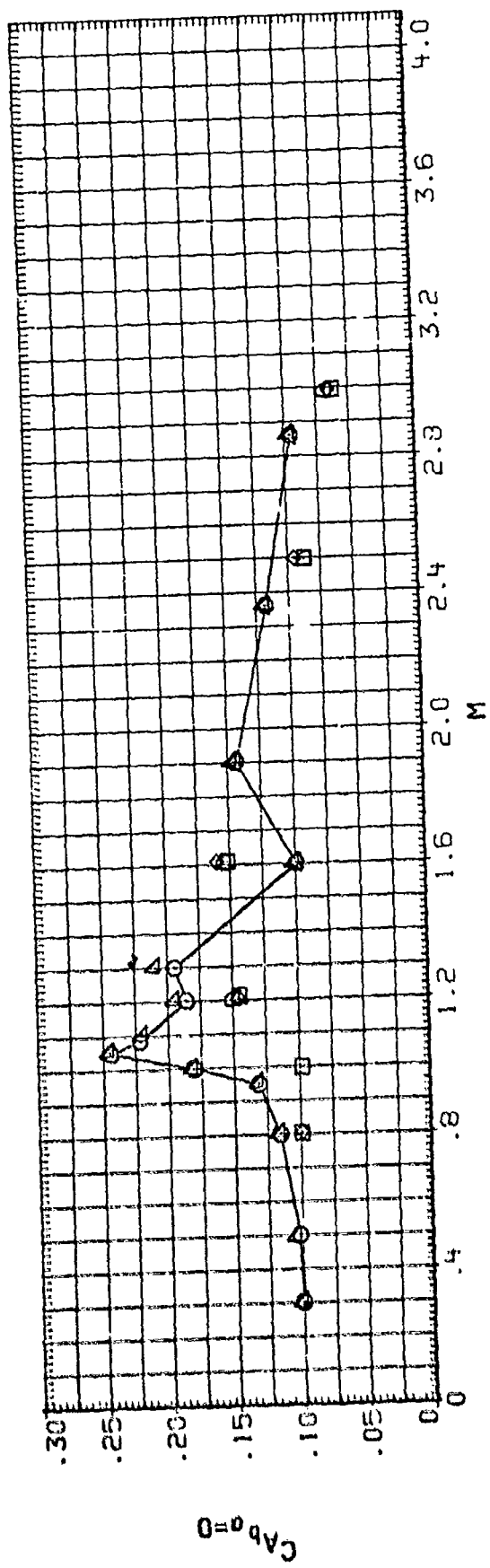
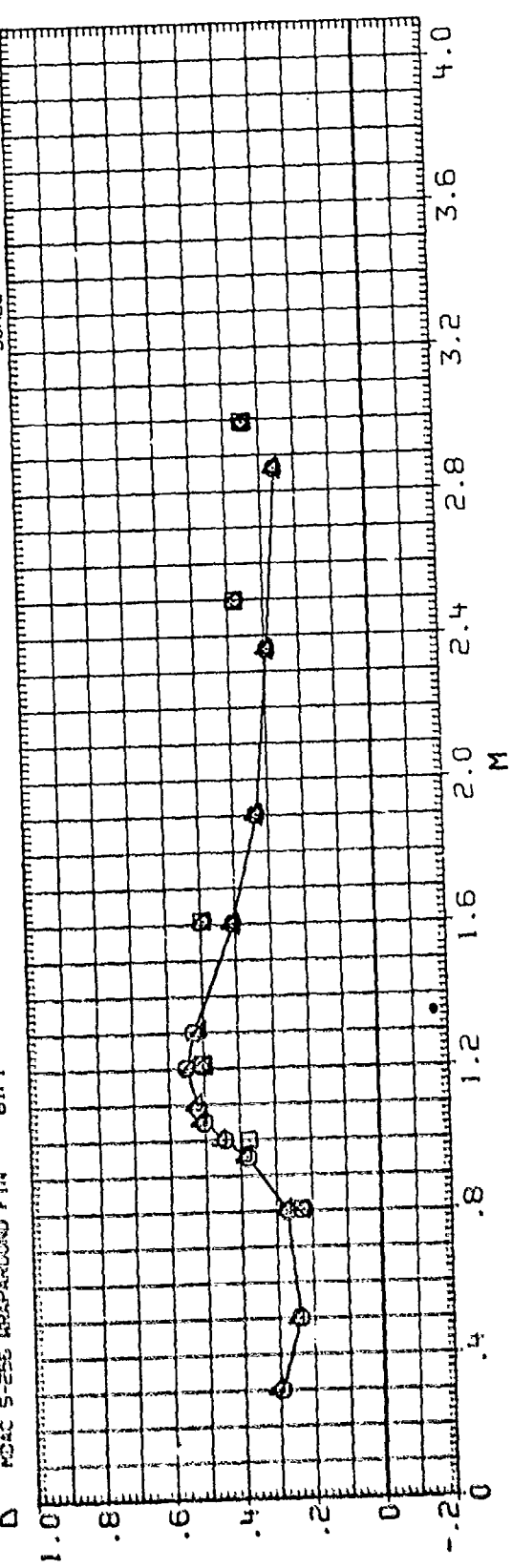
MAIN BALANCE COEFFICIENT SUMMARY, B1

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(C15509)	□	DATASETS R15509 AND R15502. B1F1	.000	1.750	.000	.660	SREF 12.5660 SQ.IN.
(D15504)	□	MCRC S-255 WRAPAROUND FIN B1F1	.000	1.750	.000	.660	L.F.F 4.0000 INCHES
(D15505)	□	MCRC S-255 WRAPAROUND FIN B1F1	22.500	1.750	.000	.660	BREF 4.0000 INCHES
(D15503)	□	LARC UPPT 520 ARC WRAP AROUND FIN MODEL B1F1	22.500	1.750	.000	.660	XMRP .0000 INCHES
(C15509)	□	DATASETS R15509 AND R15504. B1F1	45.000	1.750	.000	.660	YMRP .0000 INCHES
(D15505)	□	MCRC S-255 WRAPAROUND FIN B1F1					ZMRP .0000 INCHES
							SCALE .0000



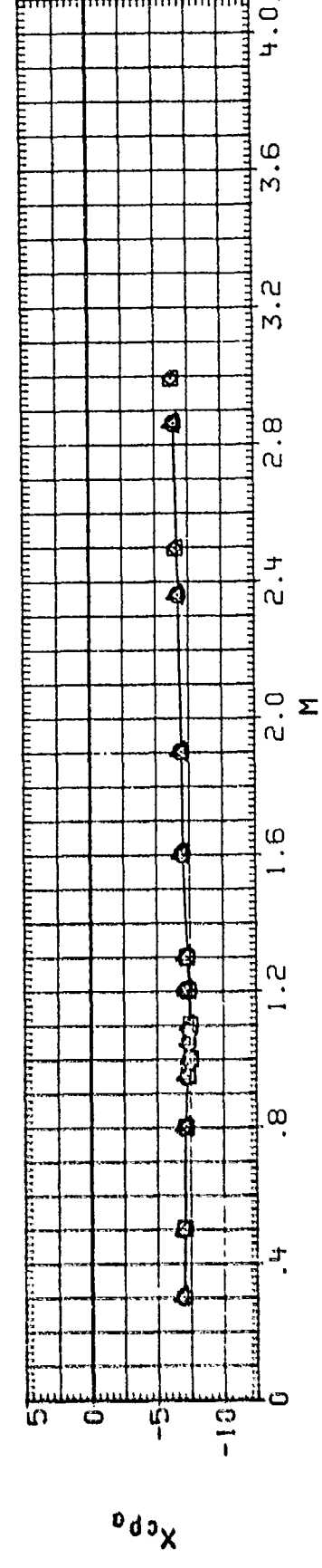
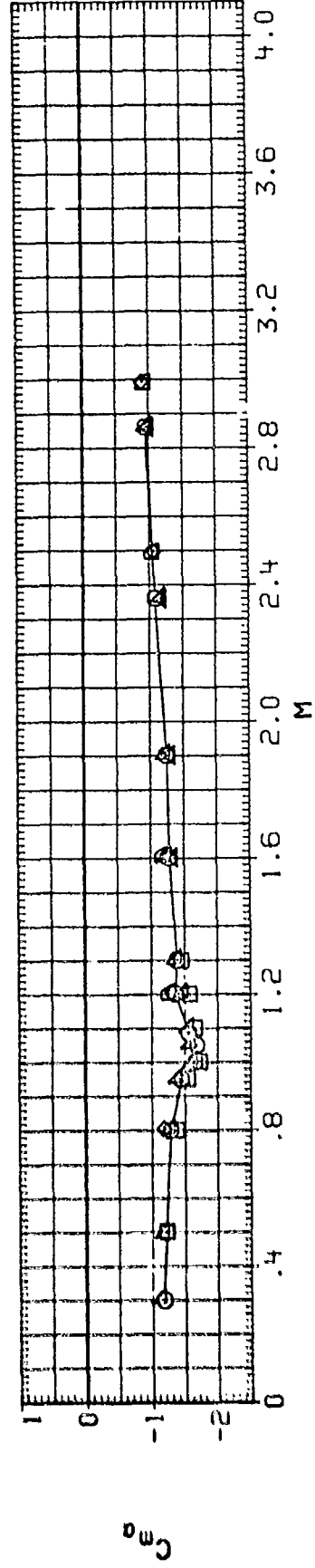
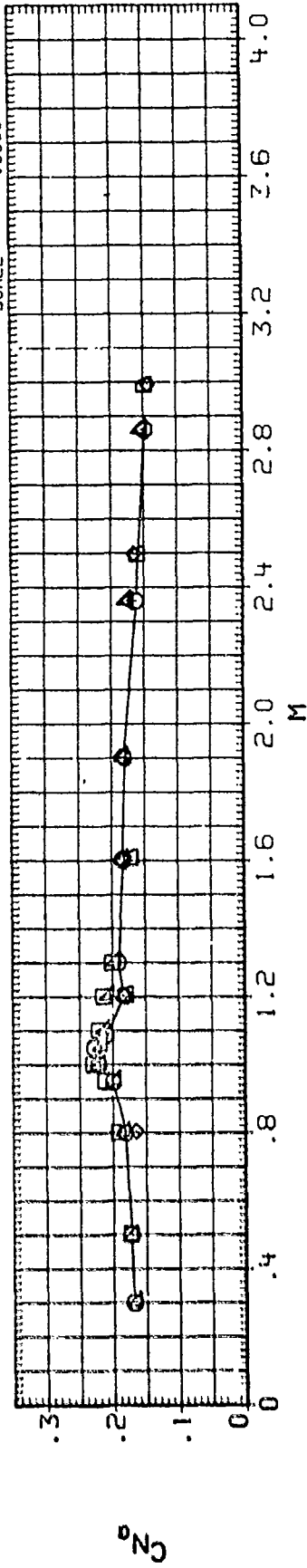
MAIN BALANCE COEFFICIENT SUMMARY, B1F1

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/20	REFERENCE INFORMATION
(C19503)	□	DATASET R1908 AND RLX002, B1F1	.000	1.750	.000	.660	SREF 12.5660 SQ. IN.
(DX5804)	◇	MDAC 5-255 WRAPAROUND FIN B1F1	.000	1.750	.000	.660	LREF 4.0000 INCHES
(DX5805)	△	MDAC 5-255 WRAPAROUND FIN B1F1	22.500	1.750	.000	.660	BREF 4.0000 INCHES
(C19503)	△	LARC UPNT 580 AMC WRAP AROUND FIN MODEL B1F1	22.500	1.750	.000	.660	YMRP .0000 INCHES
(C19503)	△	DATASET R1908 AND RLX004, B1F1	45.000	1.750	.000	.660	ZMRP .0000 INCHES
(DX5806)	△	MDAC 5-255 WRAPAROUND FIN B1F1	45.000	1.750	.000	.660	SCALE .0000

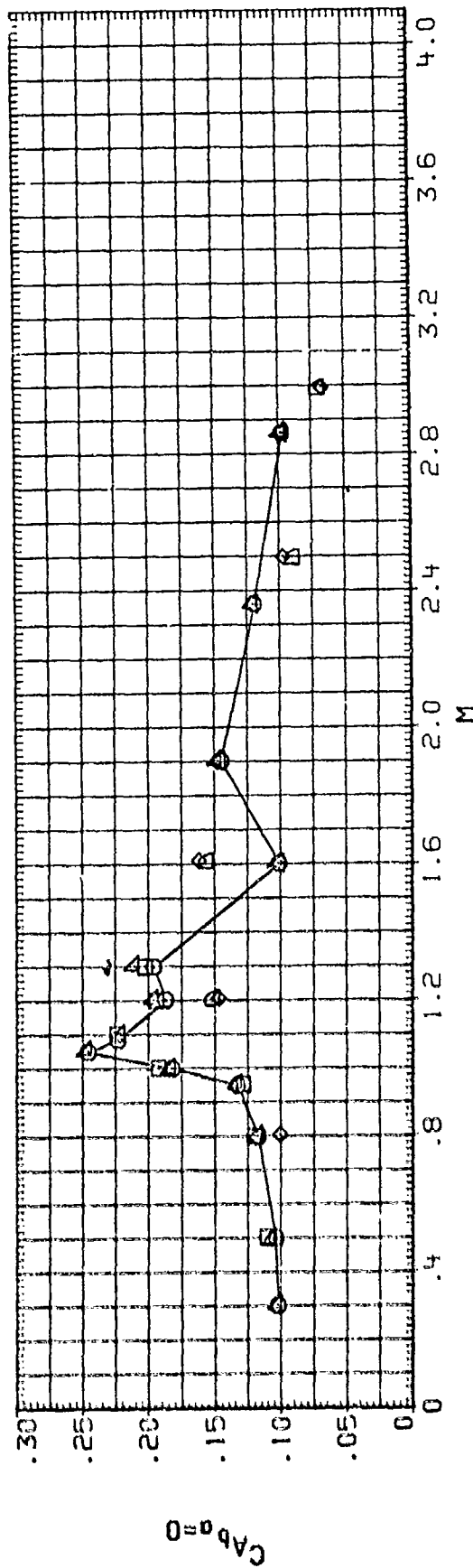
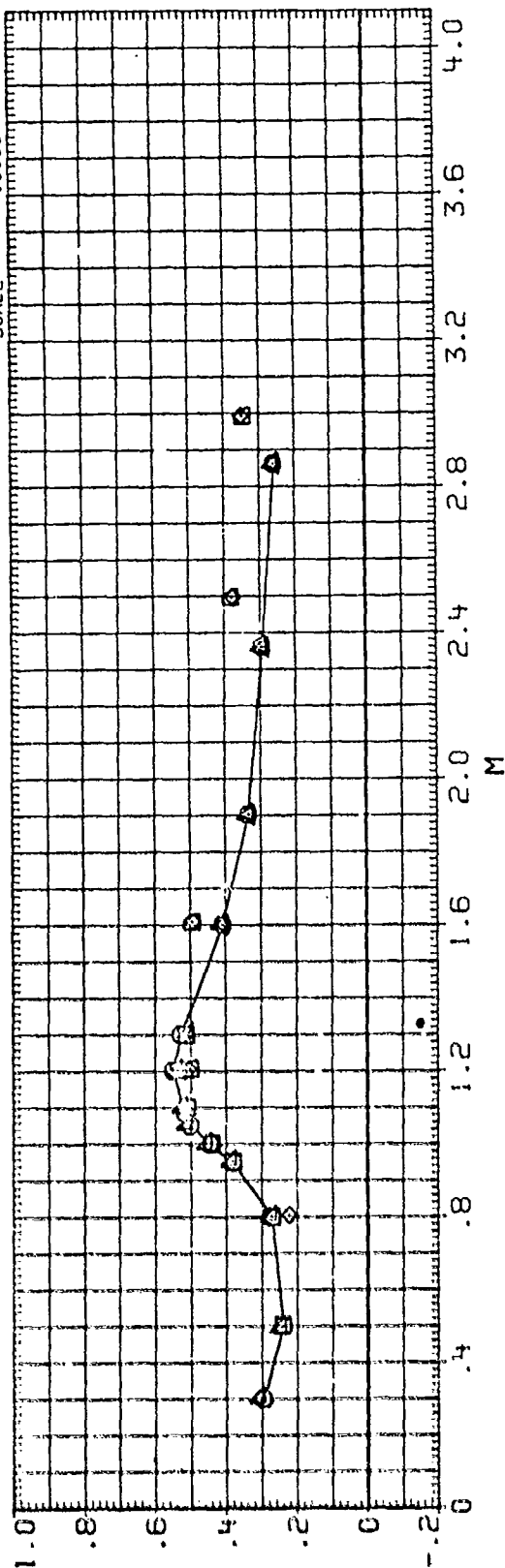


MAIN BALANCE COEFFICIENT SUMMARY, B1F1

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(C19503)	○	DATASETS R19503 AND RLX002, BIF1	.000	1.750	.000	.660	SREF 12.5660 SQ. IN.
(C19501)	◇	AEDC-1C-202, HAF FIN STUDY, BIF1	.000	1.750	.000	.660	LREF 4.0000 INCHES
(D19503)	◇	MDAC S-255 WRAPAROUND FIN, BIF1	22.500	1.750	.000	.660	EREF 4.0000 INCHES
(E19503)	△	LARC UPAT 980, AMC WRAP AROUND FIN MODEL BIF1	22.500	1.750	.000	.660	XMRP .0000 INCHES
(C19503)	◇	DATASETS R19503 AND RLX004, BIF1	45.000	1.750	.000	.660	YMRP .0000 INCHES
(D19503)	◇	MDAC S-255 WRAPAROUND FIN, BIF1	45.000	1.750	.000	.660	ZMRP .0000 INCHES
							SCALE .0000

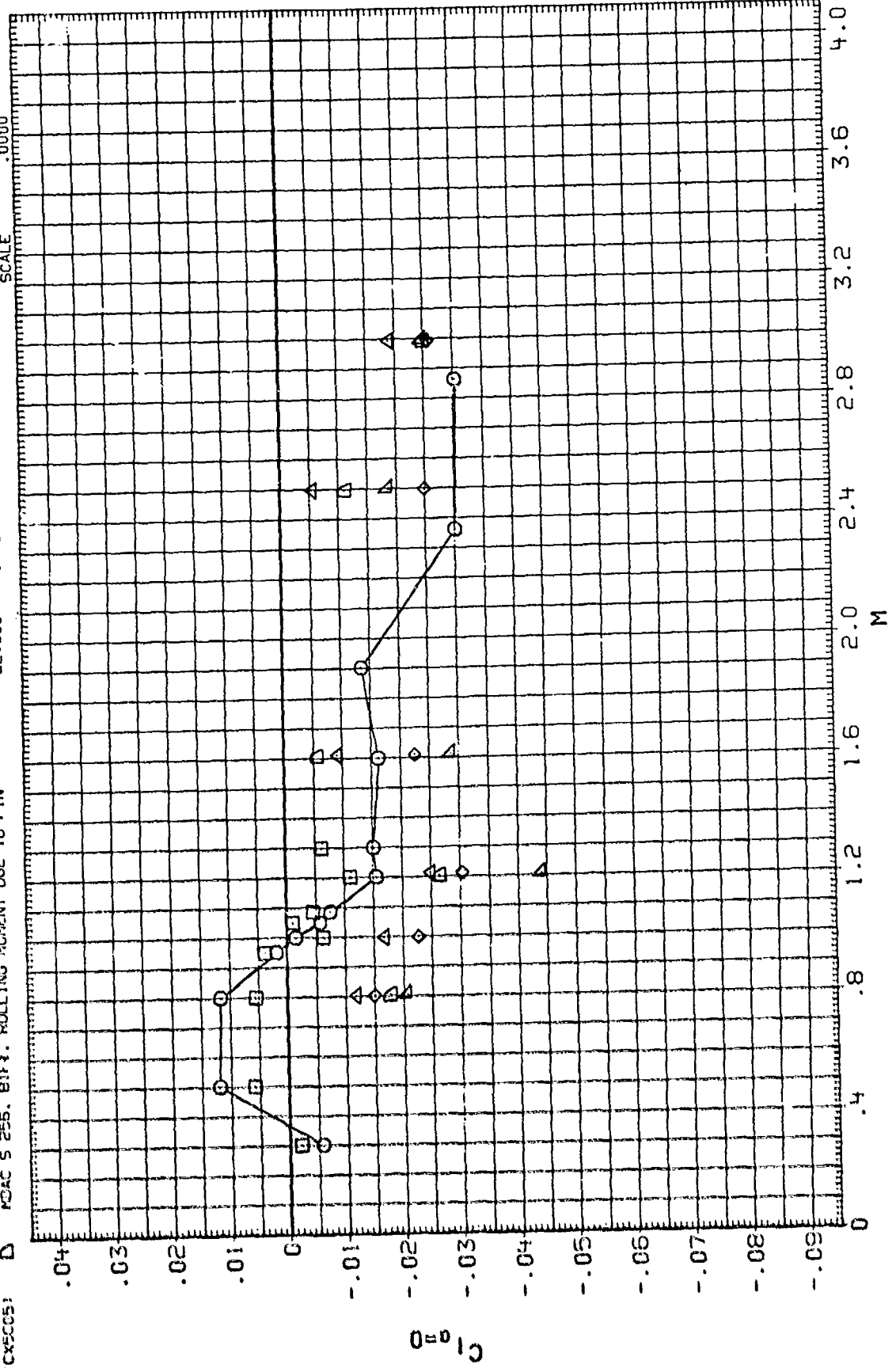


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMEDA	B/2D	REFERENCE INFORMATION	SQ. IN.
(C19528)	□	DATASET'S RISESDB AND RLX002. B1F1	.000	1.750	.000	.660	SREF	12.5660
(C19529)	◇	A500-10-202. MAF FIN STUDY. B1F1	.000	1.750	.000	.660	LREF	4.0000
(DX5525)	△	PDAC S-255 WRAPAROUND FIN. B1F1	22.500	1.750	.000	.660	BREF	4.0000
(RLX523)	△	LAC OPAF 983 AND WRAP AROUND FIN MODEL	22.500	1.750	.000	.660	XMRP	.0000
(C19523)	◇	DATASET'S RISESDB AND RLX004. B1F1	45.000	1.750	.000	.660	YMRP	.0000
(DX5526)	◇	PDAC S-255 WRAPAROUND FIN. B1F1	45.000	1.750	.000	.660	ZMRP	.0000
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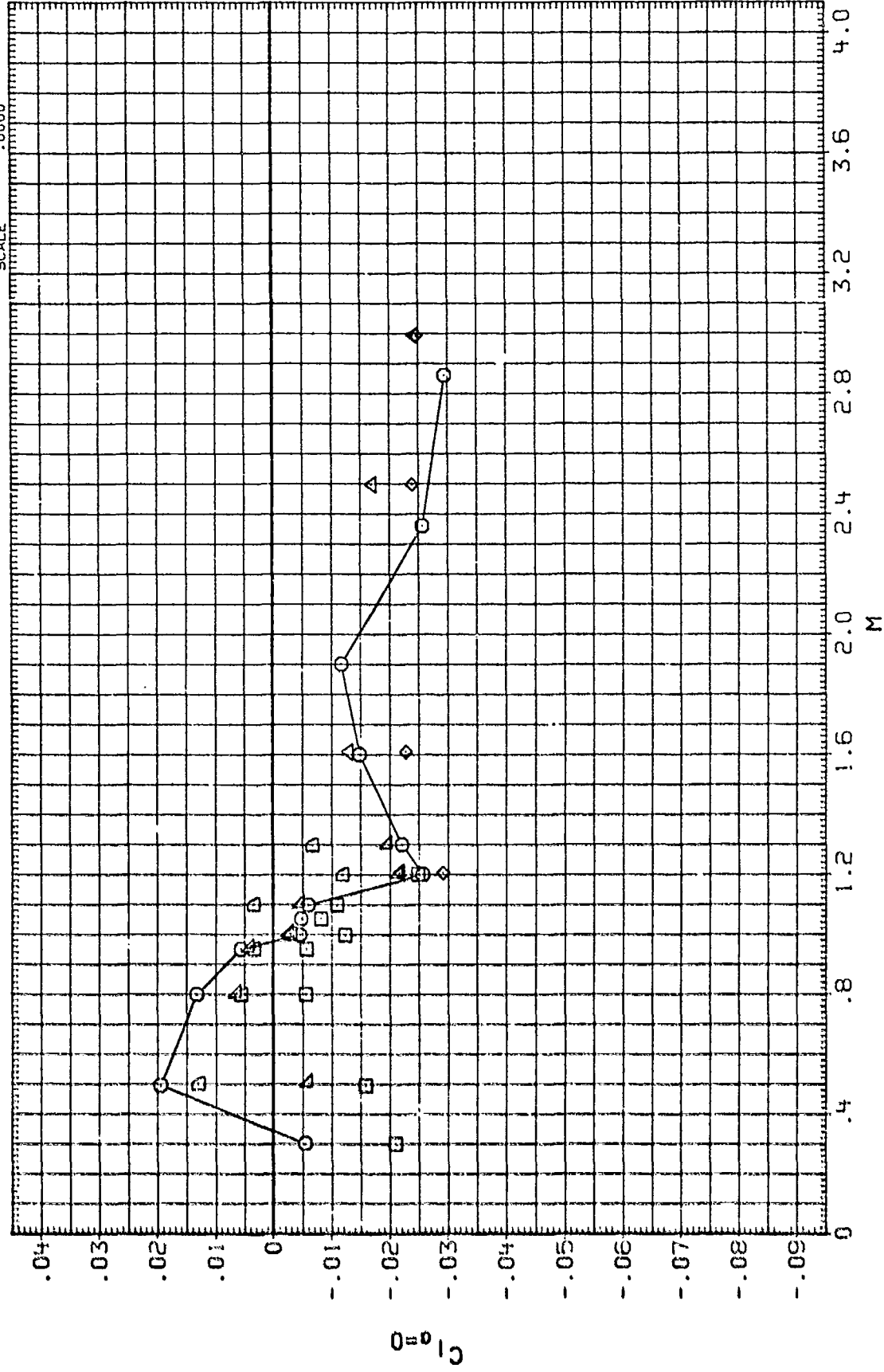


MAIN BALANCE COEFFICIENT SUMMARY, B1F1

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
CT95081	○	DATASETS RT808 AND RLX002, BIF1	.000	1.750	.000	.660	SREF 12.5650 SQ. IN.
CT95082	□	AECG TO 154/170 BIF1, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.660	LREF 4.0000 INCHES
CT95083	◇	PDAC S-255 WRAPAROUND FIN BIF1	.000	1.750	.000	.660	BREF 4.0000 INCHES
CT95084	△	PDAC S-255, BIF1, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.660	YMRP .0000 INCHES
CT95085	◇	PDAC S-255 WRAPAROUND FIN BIF1	22.500	1.750	.000	.660	ZMRP .0000 INCHES
CT95086	△	PDAC S-255, BIF1, ROLLING MOMENT DUE TO FIN	22.500	1.750	.000	.660	SCALE .0000



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(C19509)	○	DATASETS R19509 AND RLX804, B1F1	45.000	1.750	.000	.660	SREF 12.5660 SQ. IN.
(D19509)	□	AEDC IC 154/170 B1F1, ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.660	LREF 4.0000 INCHES
(D19509)	◇	MDAC S-255 WRAPAROUND FIN B1F1	45.000	1.750	.000	.660	BREF 4.0000 INCHES
(C19509)	△	MDAC S-255, B1F1, ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.660	XMRP .0000 INCHES
(C19509)	◇	AEDC-1C-202, WAF FIN STUDY, B1F1	.000	1.750	.000	.660	YMRP .0000 INCHES
(D19509)	△	AEDC IC 202, B1F1, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.660	ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B1F1

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (C155:7) DATASETS RTB17 AND RLX805, BIF2
 (C155:8) AEDC-T0154/170 AFATL FIN STUDY BIF2
 (C155:9) DATASETS RTB19 AND RLX805, BIF2
 (DX52:9) MCAC S-255 WRAPAROUND FIN BIF2
 (DX52:10) MCAC S-255 WRAPAROUND FIN BIF2
 (DX52:11) MCAC S-255 WRAPAROUND FIN BIF2

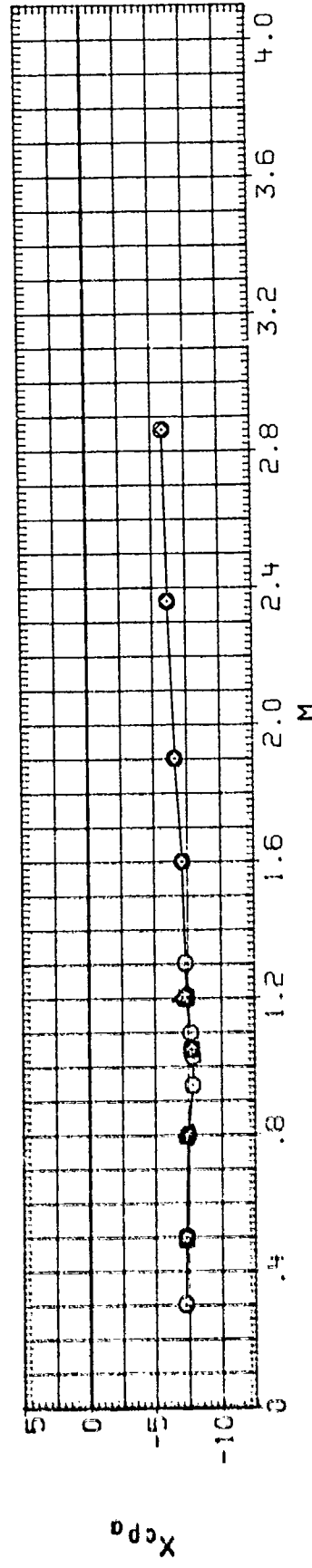
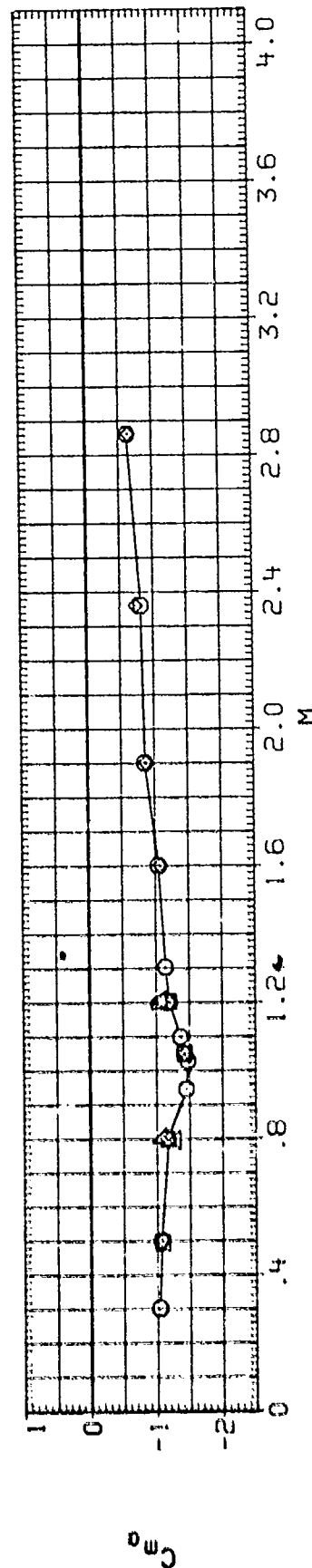
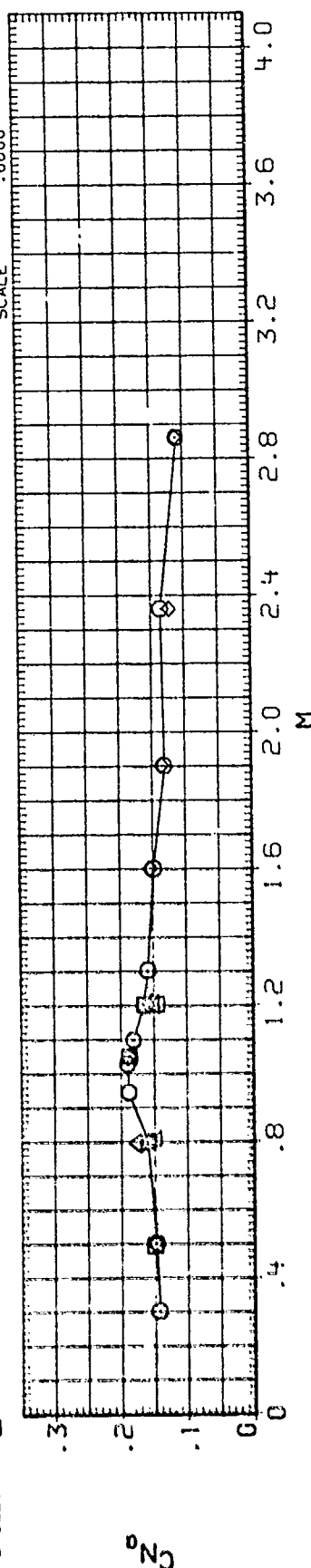
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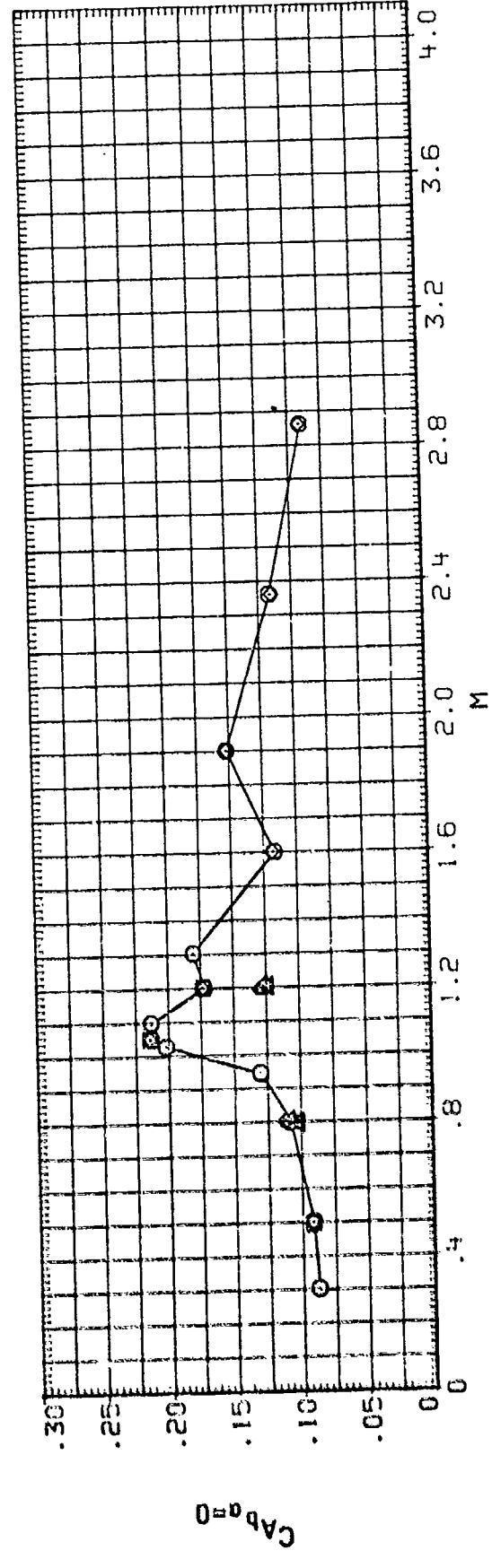
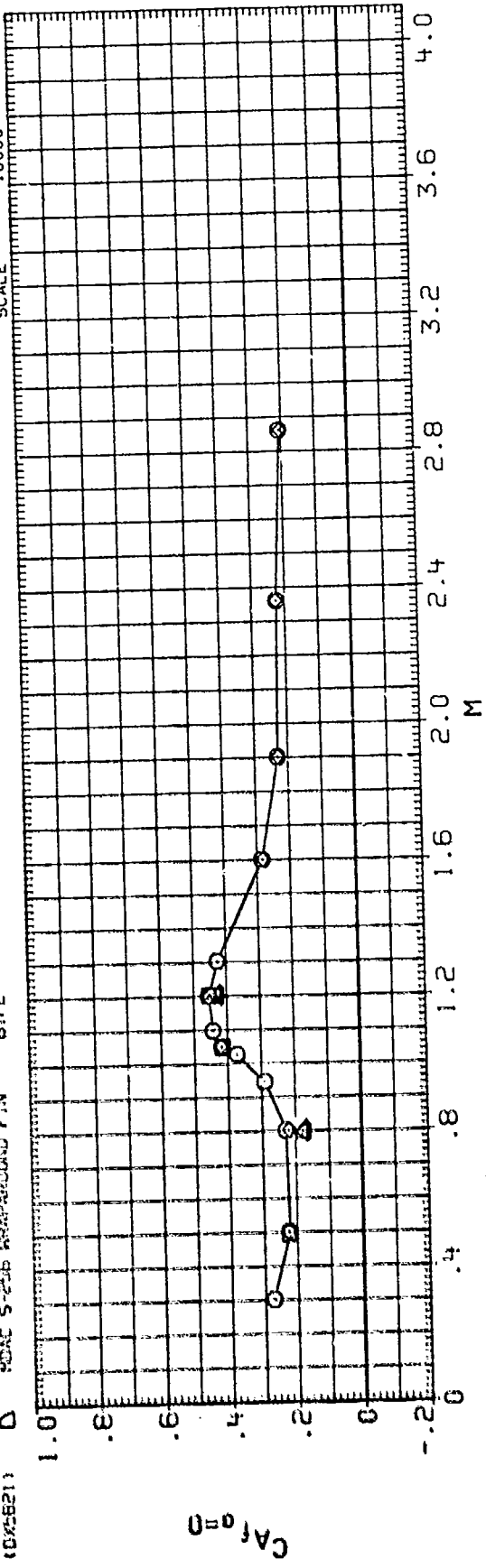
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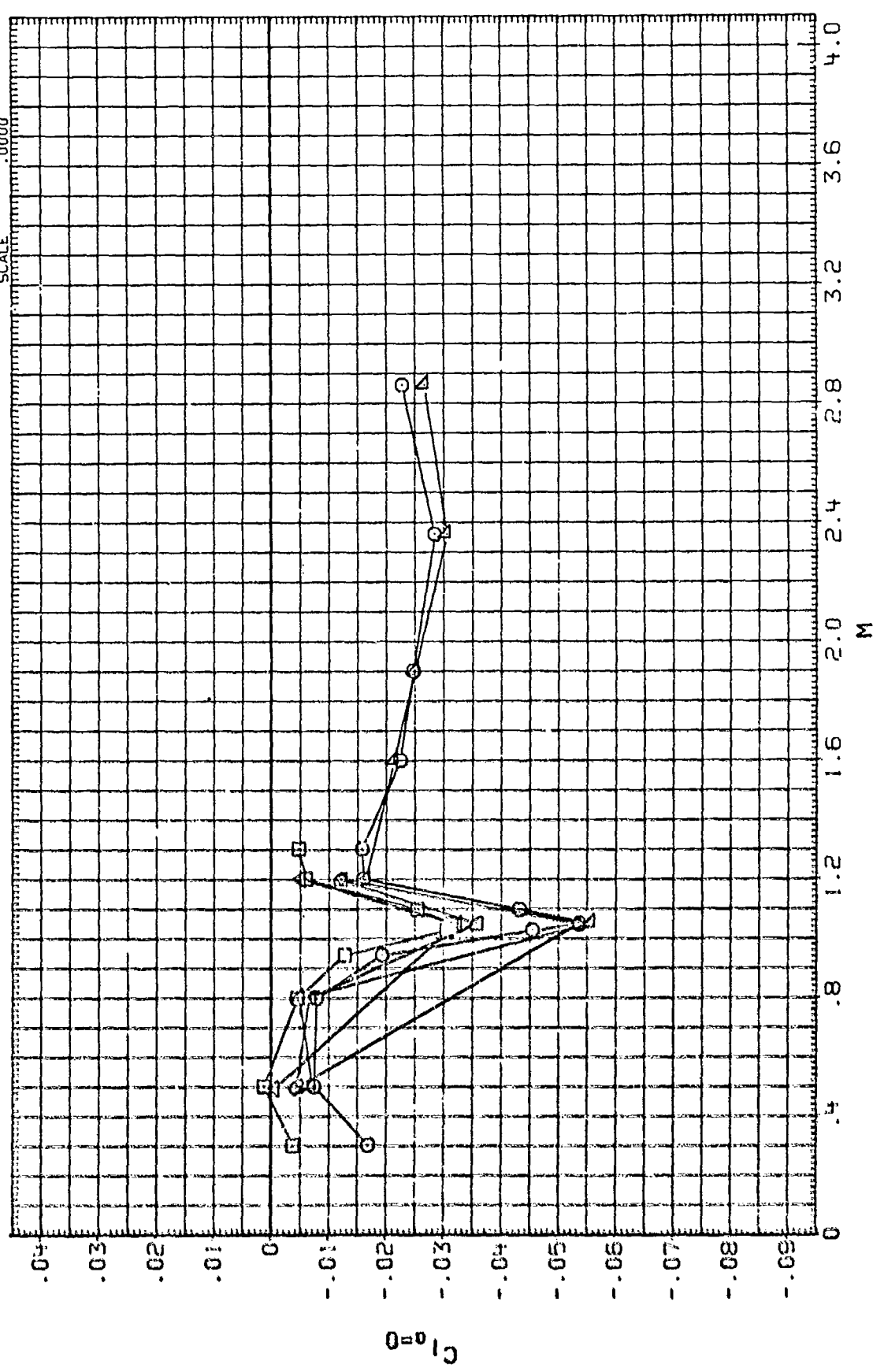
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 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(C19517)	□	DATASET R15B17 AND RLX555. B1F2	.000	1.000	.000	.650	SREF 12.5660 SQ. IN.
(C19518)	◇	AEDC-1C15M/170 AFATL FIN STUDY B1F2	22.500	1.000	.000	.650	LREF 4.0000 INCHES
(C19519)	△	DATASET R15B19 AND RLX555. B1F2	45.000	1.000	.000	.650	BREF 4.0000 INCHES
(C19520)	▽	POAC S-255 WRAPAROUND FIN B1F2	.000	1.000	.000	.650	YMRP .0000 INCHES
(C19521)	◇	POAC S-255 WRAPAROUND FIN B1F2	22.500	1.000	.000	.650	ZMRP .0000 INCHES
(C19522)	◇	POAC S-255 WRAPAROUND FIN B1F2	45.000	1.000	.000	.650	SCALE .0000

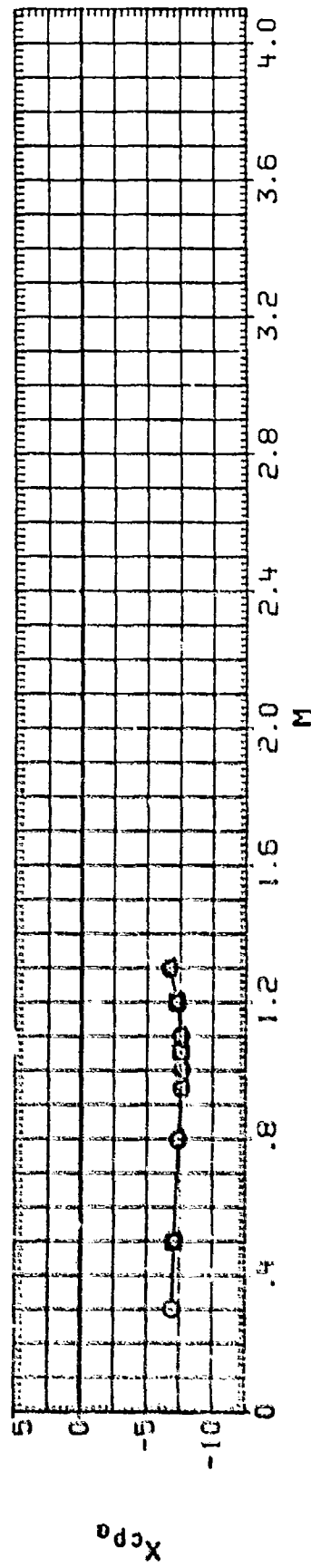
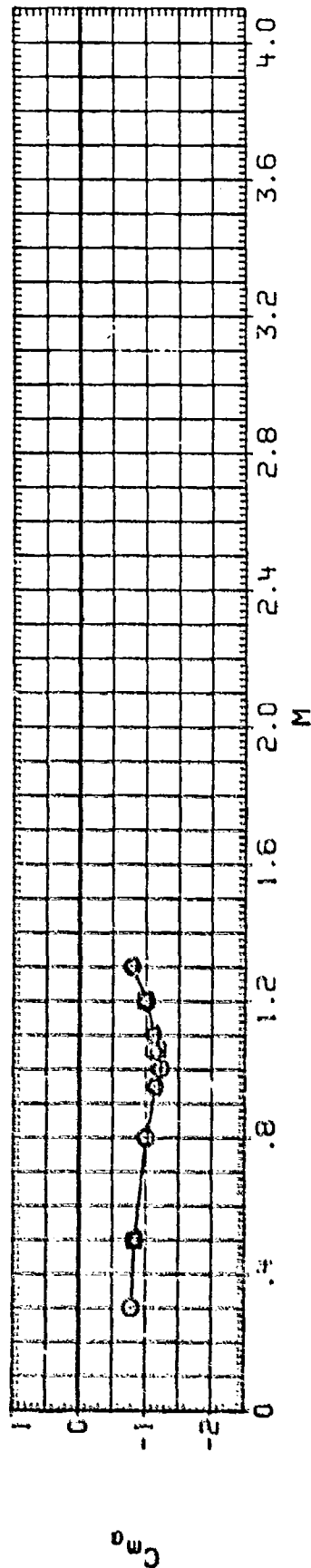
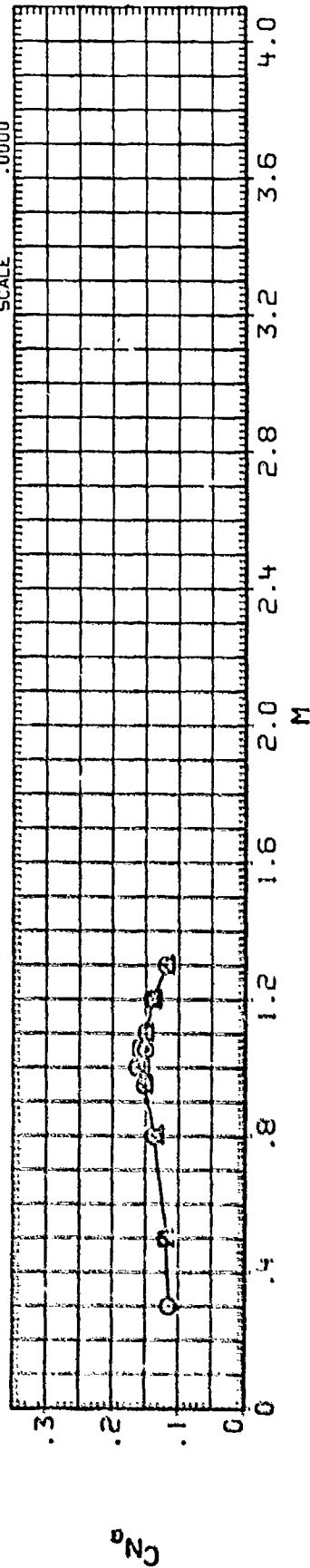


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(C195:7)	○	DATASET'S 915B17 AND RLX8D5, BIF2	.000	1.000	.000	.650	SREF 12.5660 SQ. IN.
(C195:7)	□	AEDC TC 154/170 BIF2, ROLLING MOMENT DUE TO FIN	.000	1.000	.000	.650	LPEF 4.0000 INCHES
(C195:8)	◇	AEDC TC 154/170 BIF2, ROLLING MOMENT DUE TO FIN	22.500	1.000	.000	.650	BREF 4.0000 INCHES
(C195:8)	△	AEDC TC 154/170 BIF2, ROLLING MOMENT DUE TO FIN	22.500	1.000	.000	.650	XMRP .0000 INCHES
(C195:9)	◇	DATASET'S 915B19 AND RLX8D5, BIF2	45.000	1.000	.000	.650	YMRP .0000 INCHES
(C195:9)	◇	AEDC TC 154/170 BIF2, ROLLING MOMENT DUE TO FIN	45.000	1.000	.000	.650	ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, BIF2

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(C19314)	□	AEDC-TC184/170 AFAL FIN STUDY BIF3	.000	.500	.000	.650	SREF 12.5660 SQ. IN.
(C19315)	□	AEDC-TC184/170 AFAL FIN STUDY BIF3	22.500	.500	.000	.650	LREF 4.0000 INCHES
(C19315)	□	AEDC-TC184/170 AFAL FIN STUDY BIF3	45.000	.500	.000	.650	BREF 4.0000 INCHES
(C19321)	△	AEDC-TC-202. HAF FIN STUDY. BIF3	.000	.500	.000	.650	XMRP .0000 INCHES
							YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY. B1F3

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (C18314) AEDC-TC15A/170.AFALC FIN STUDY B1F3
 (C18315) AEDC-TC15A/170.AFALC FIN STUDY B1F3
 (C18316) AEDC-TC15A/170.AFALC FIN STUDY B1F3
 (C18317) AEDC-TC15A/170.AFALC FIN STUDY B1F3

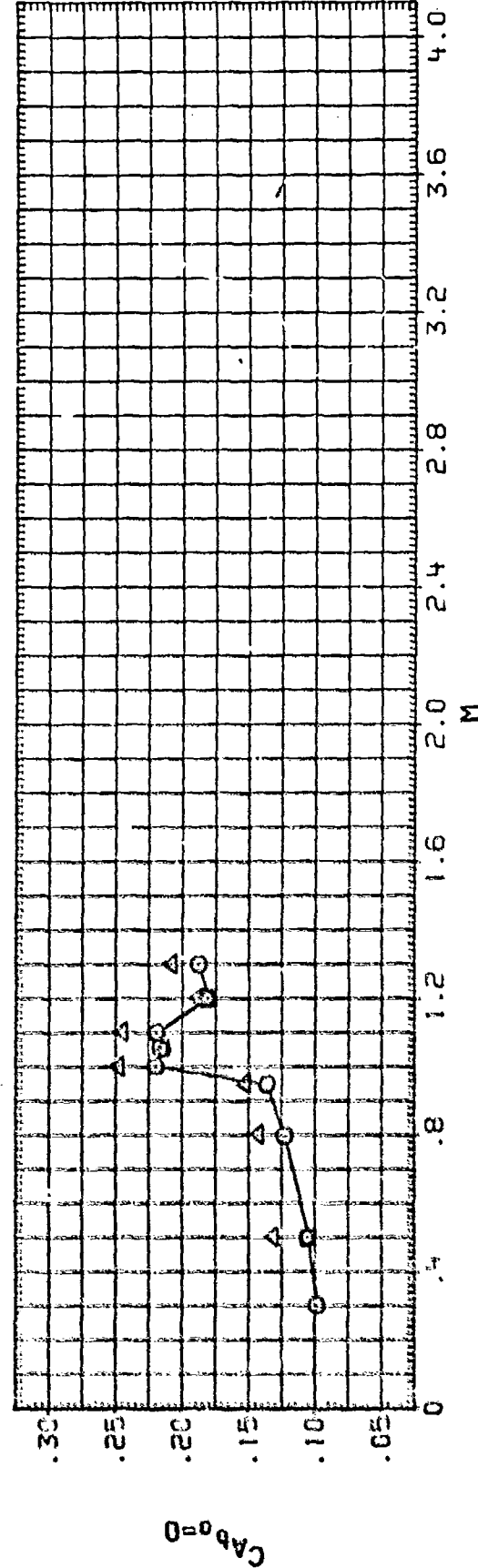
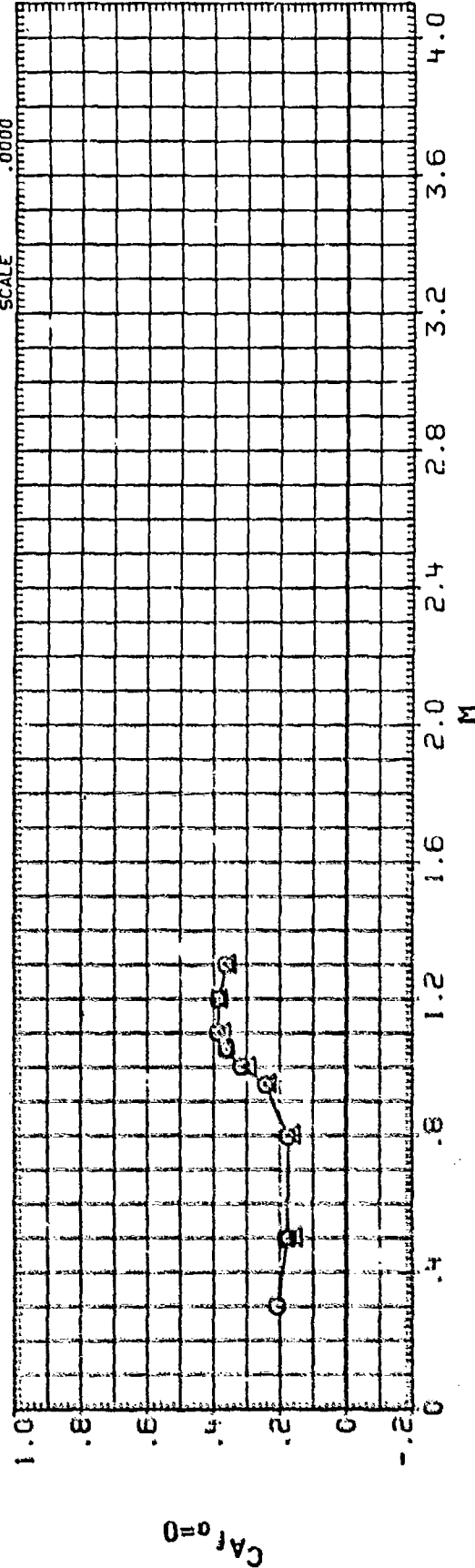
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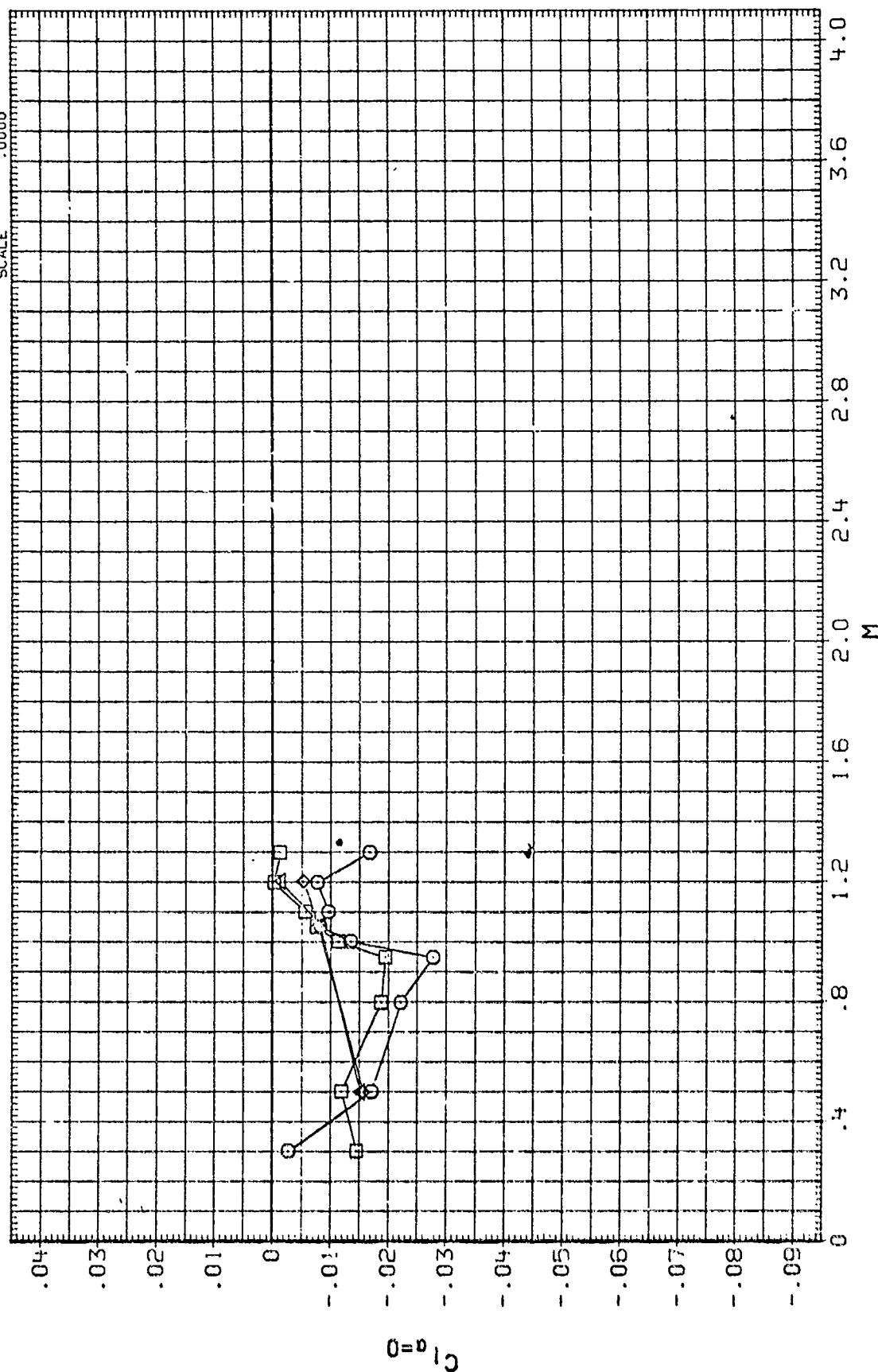
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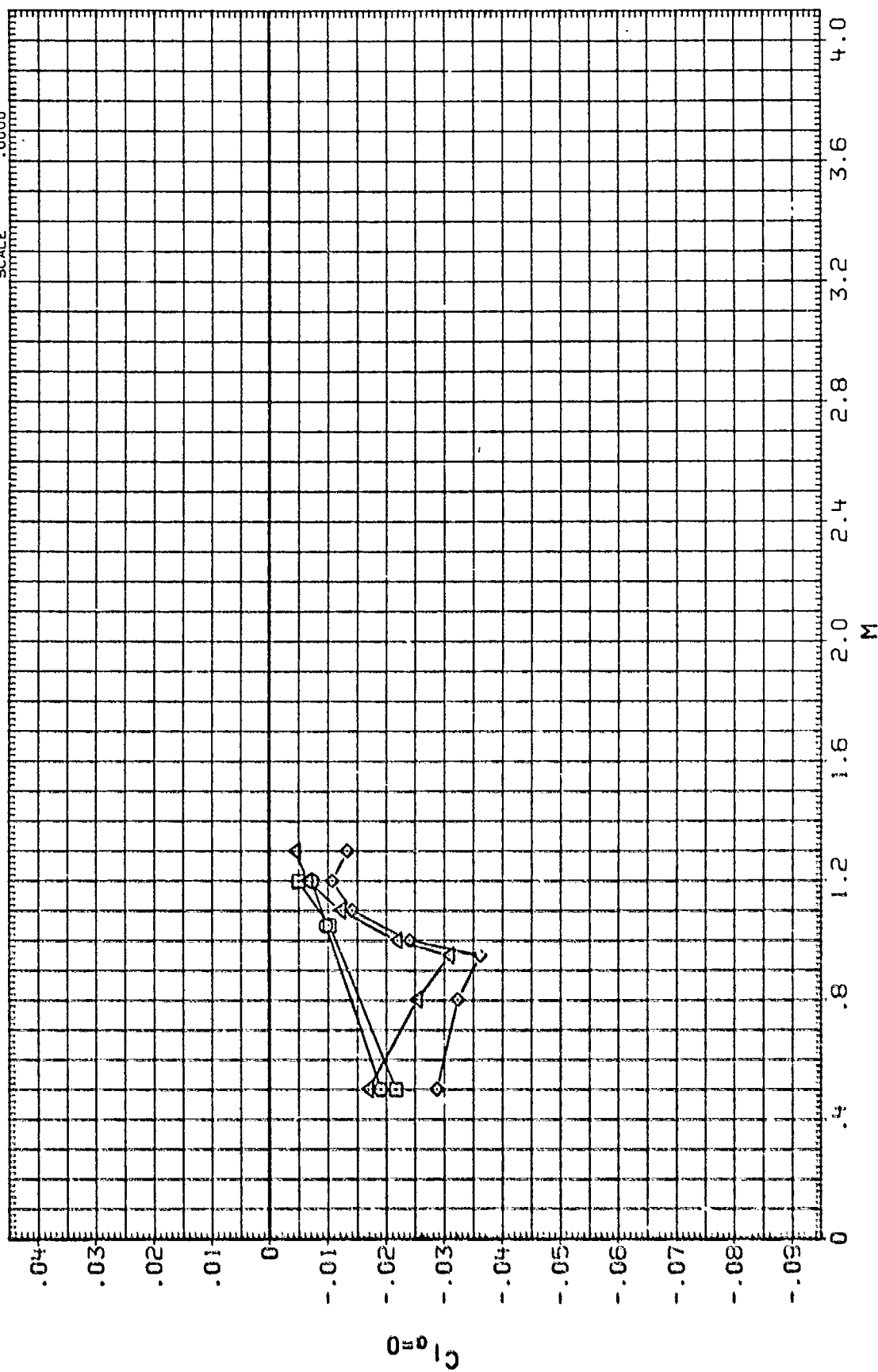


MAIN BALANCE COEFFICIENT SUMMARY. B1F3

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(CT9B14)	○	AEDC-TC154/170, AFATL FIN STUDY B1F3	.000	.500	.000	.650	SREF 12.5650 50. IN.
(DT9C14)	□	AEDC TC 154/170 B1F3, ROLLING MOMENT DUE TO FIN	.000	.500	.000	.650	LREF 4.0000 INCHES
(CT9B15)	◇	AEDC-TC154/170, AFATL FIN STUDY B1F3	22.500	.500	.000	.650	BREF 4.0000 INCHES
(DT9C15)	△	AEDC TC 154/170 B1F3, ROLLING MOMENT DUE TO FIN	22.500	.500	.000	.650	XMRP .0000 INCHES
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							SCALE .0000



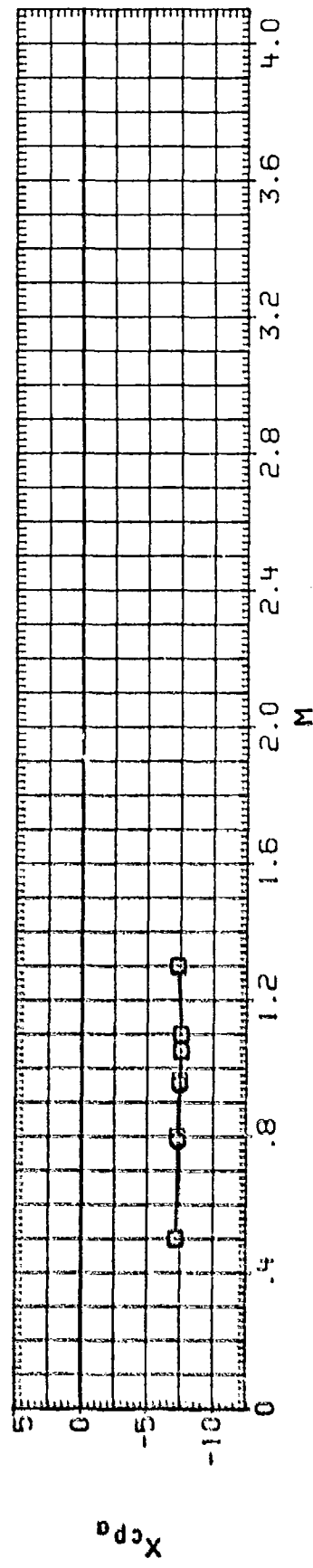
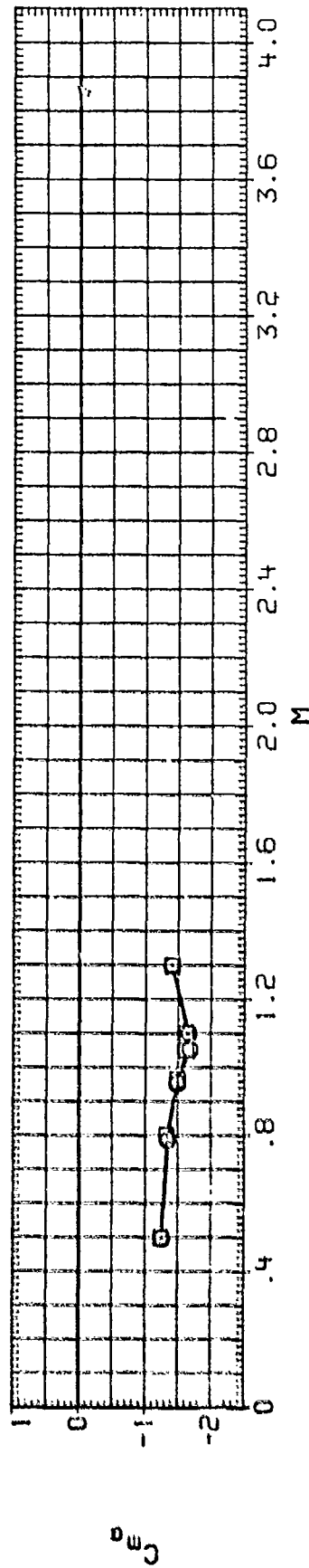
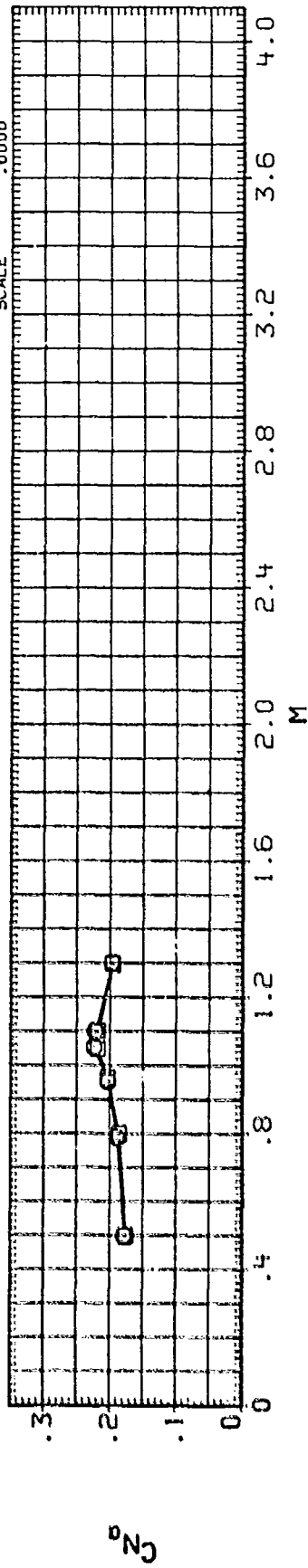
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(CTGB16)	○	AEDC-TC154/170, AFATL FIN STUDY B1F3	45.000	.500	.000	.650	SREF 12.5660 SQ. IN.
(DTSC16)	□	AEDC TC 154/170 B1F3, ROLLING MOMENT DUE TO FIN	45.000	.500	.000	.650	LREF 4.0000 INCHES
(CTES02)	◇	AEDC-TC-202, WAF FIN STUDY, B1F3	.000	.500	.000	.650	BREF 4.0000 INCHES
(DTES02)	△	AEDC TC 202, B1F3, ROLLING MOMENT DUE TO FIN	.000	.500	.000	.650	XMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B1F3

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (C19331) □ AEDC-T0154/170.AFATL FIN STUDY B1F4
 (C19332) □ AEDC-T0154/170.AFATL FIN STUDY B1F4

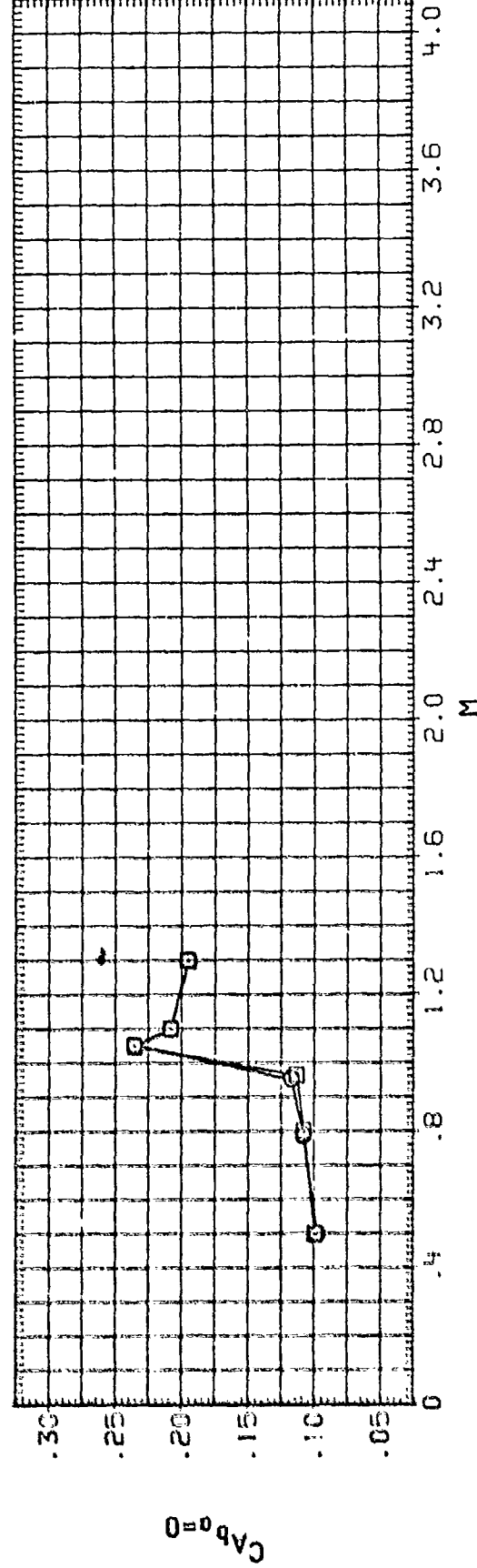
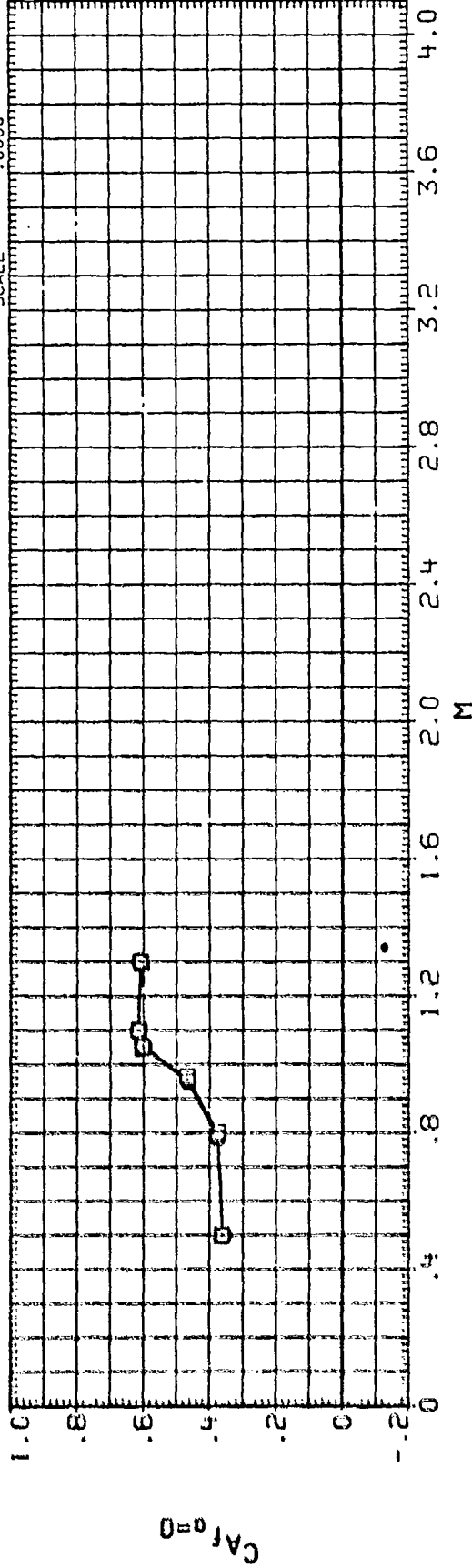
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 SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B1F4

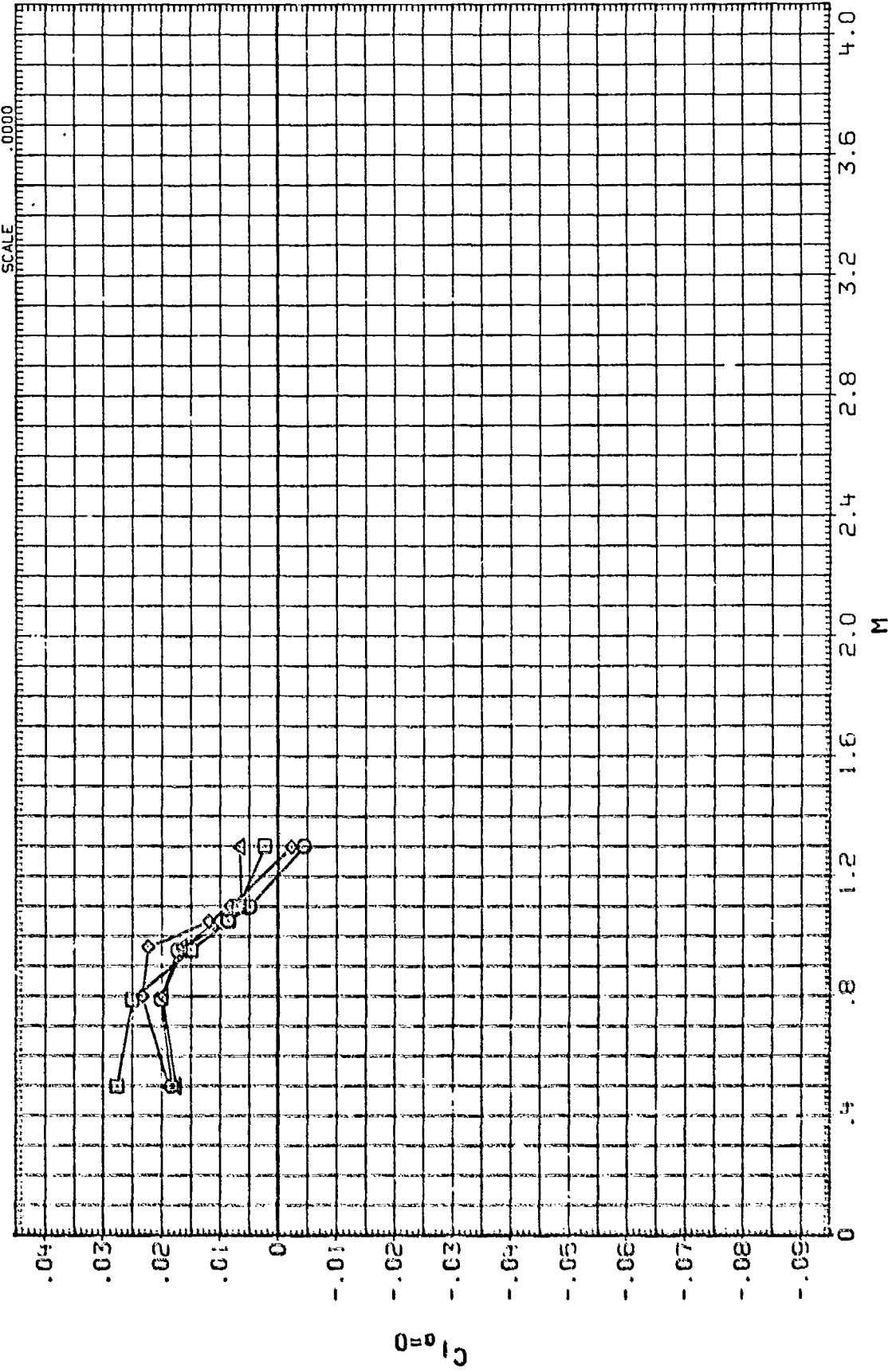
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MAIN BALANCE COEFFICIENT SUMMARY, B1F4

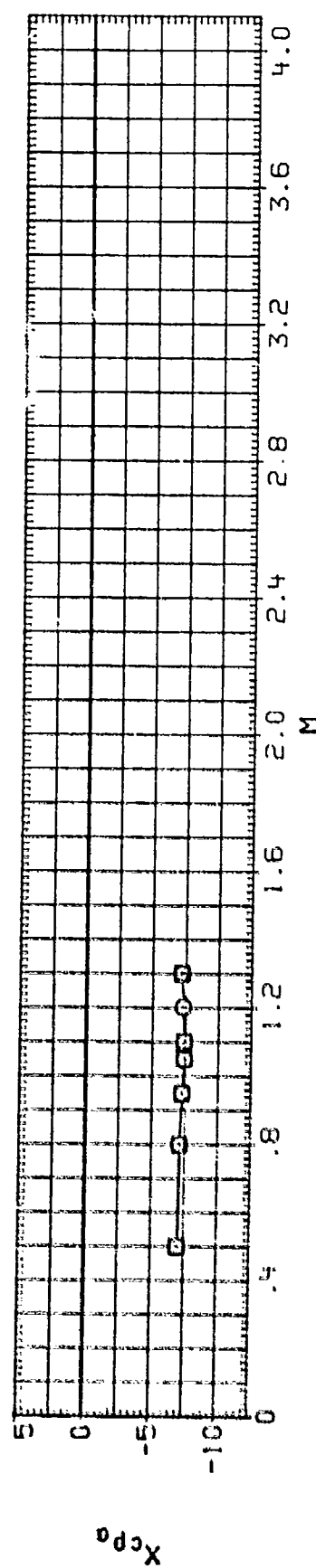
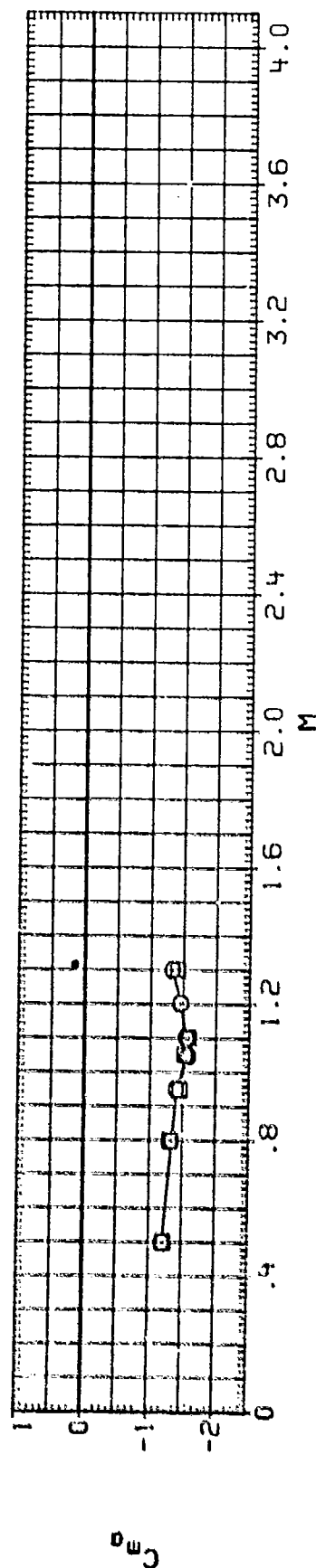
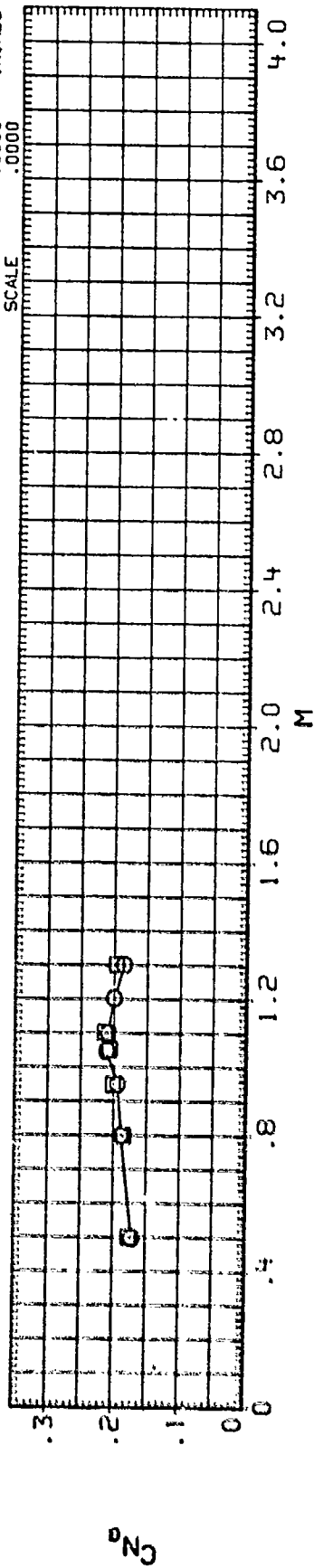
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IC19B31	○	AEDC-IC154/170 AFATL FIN STUDY BIF4	.000	1.750	.000	.660	SREF 12.5660 SO. IN.
IC19C31	□	AEDC IC 154/170 BIF4, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.660	LREF 4.0000 INCHES
IC19B32	◇	AEDC-IC154/170 AFATL FIN STUDY BIF4	45.000	1.750	.000	.660	BREF 4.0000 INCHES
IC19C32	△	AEDC IC 154/170 BIF4, ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.660	XYRP .0000 INCHES
							YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



DATA SET: SYM2L CONFIGURATION DESCRIPTION
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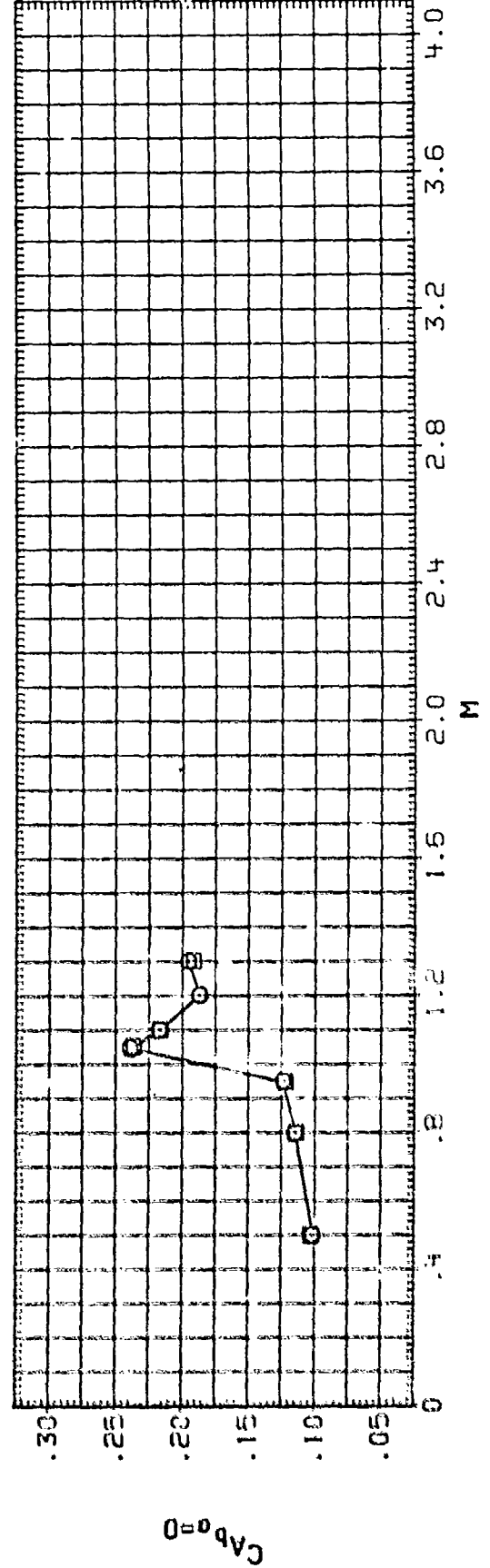
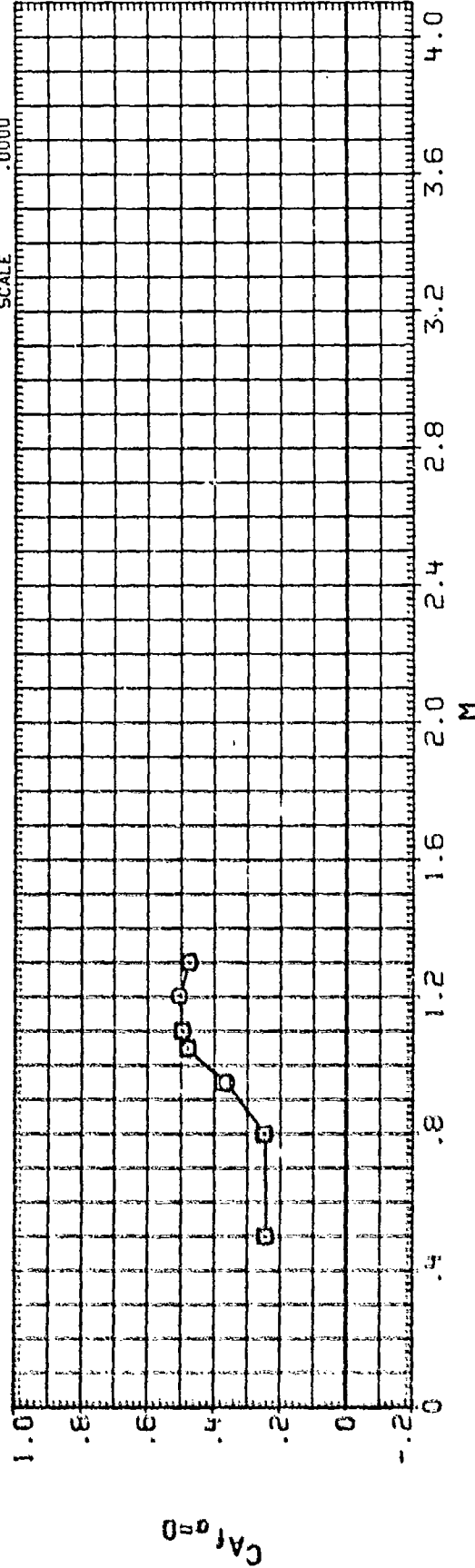
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DATA SET SYMBOL CONFIGURATION DESCRIPTION
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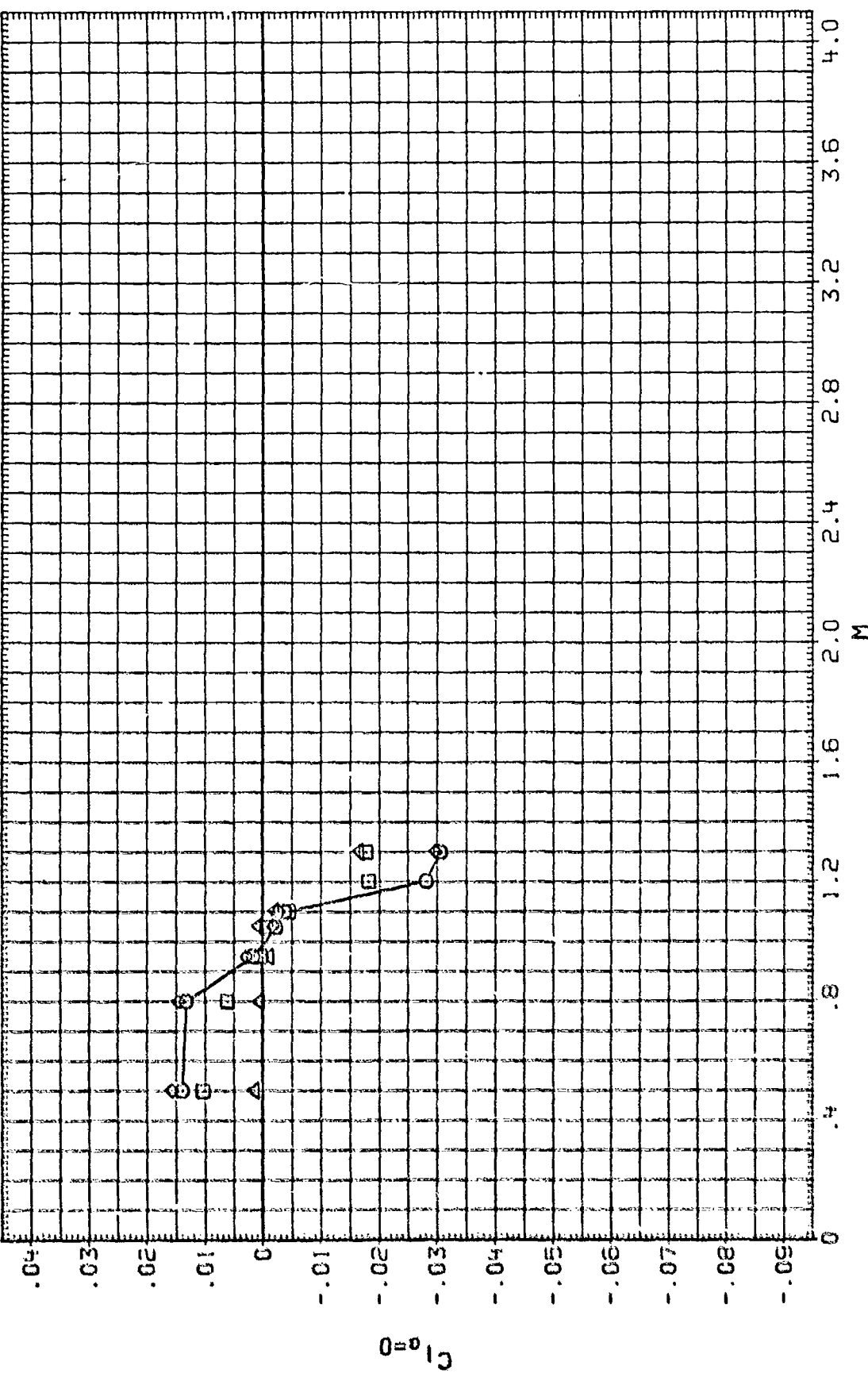
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DATA SET SYMBOL CONFIGURATION DESCRIPTION

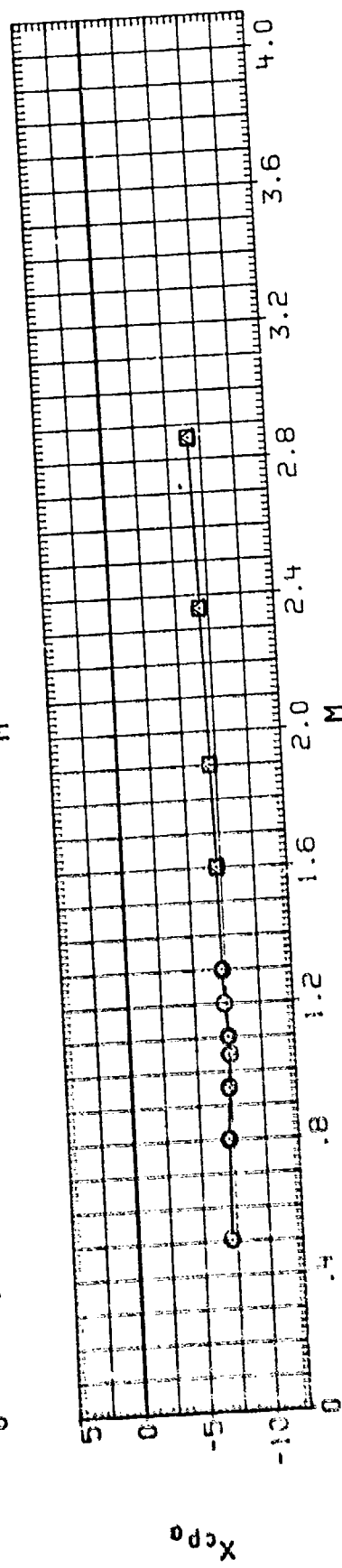
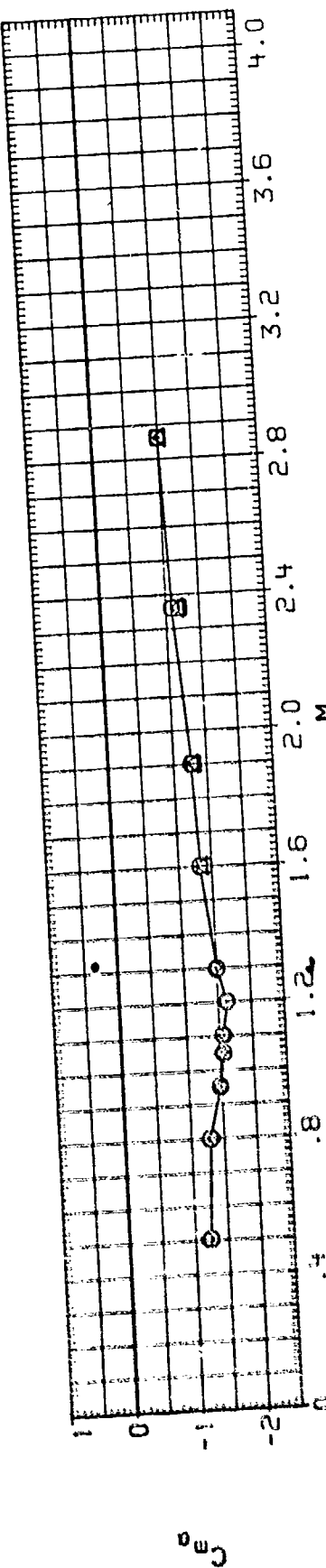
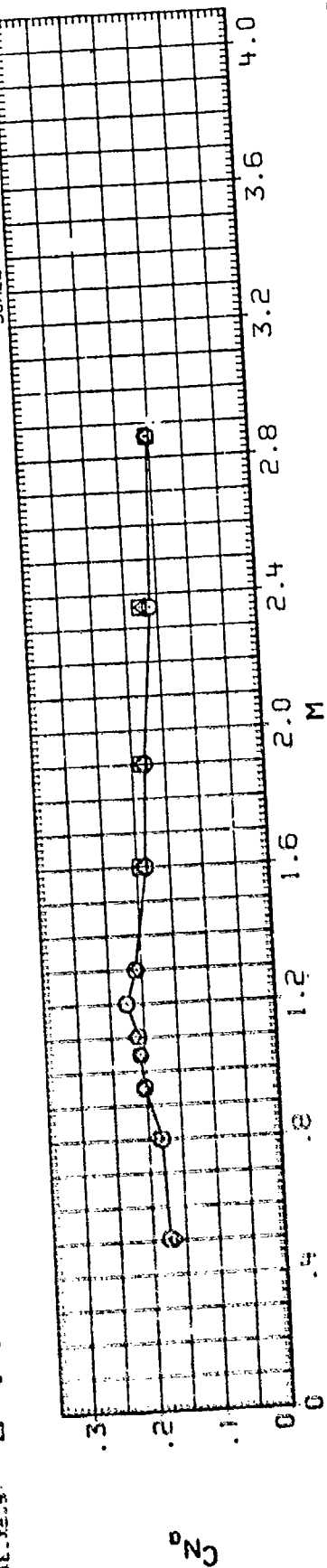
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ICT9331: D AEDC-TC154/170 AFATL FIN STUDY B1F5
ICT9331: A AEDC TC 154/170 B1F5, ROLLING MOMENT DUE TO FIN

PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
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.000	1.750	.000	.660	LREF 4.0000 INCHES
45.000	1.750	.000	.660	BREF 4.0000 INCHES
45.000	1.750	.000	.660	XMRP .0000 INCHES
				YMRP .0000 INCHES
				ZMRP .0000 INCHES
				SCALE .0000

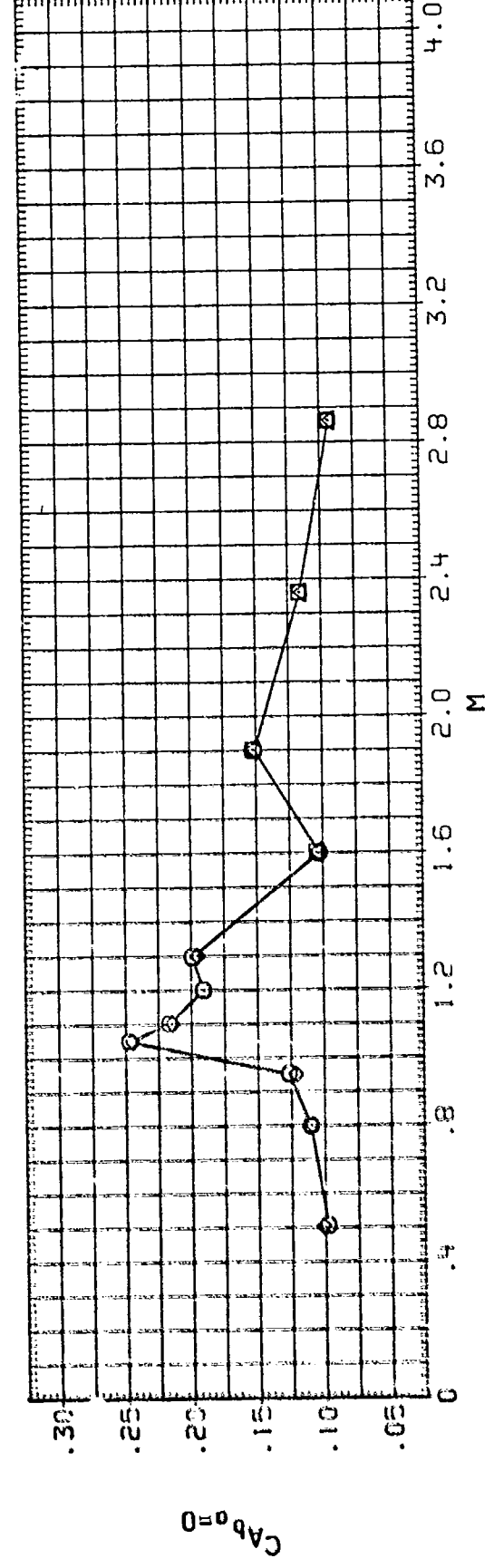
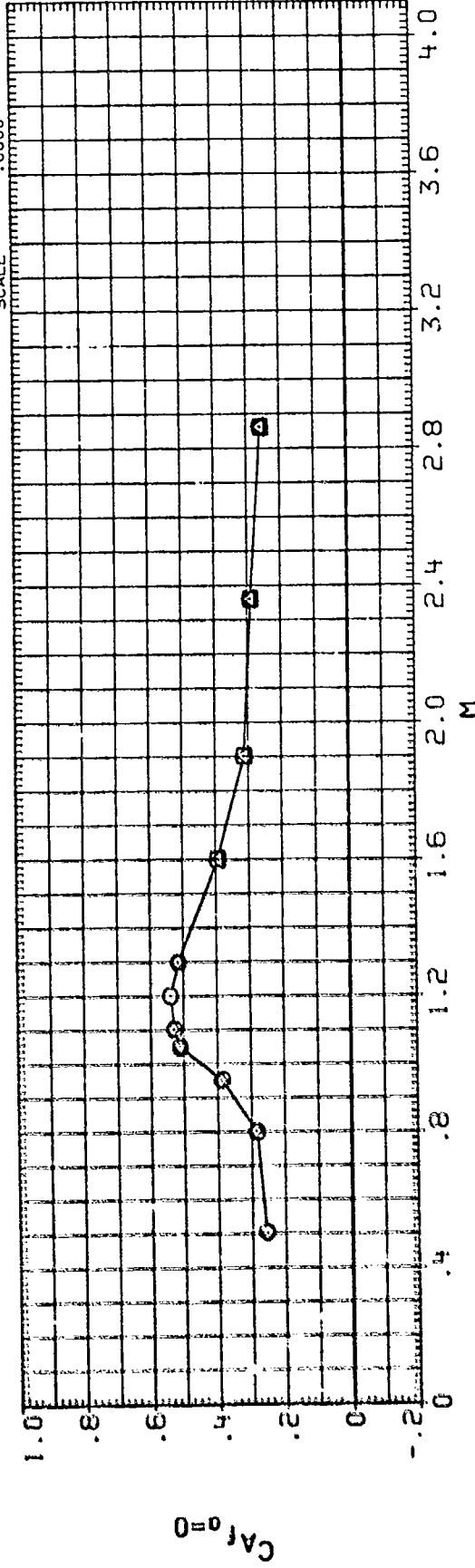


MAIN BALANCE COEFFICIENT SUMMARY, B1F5

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
101981	○	ASDC-1015-170 AFAL FIN STUDY B1F6	.000	1.750	.000	.660	SREF 12.5660 SQ. IN.
101982	○	LARC UPAT 983 AMC WARP AROUND FIN MODEL B1F6	22.500	1.750	.000	.660	LREF 4.0000 INCHES
101983	○	ASDC-1015-170 AFAL FIN STUDY B1F6	45.000	1.750	.000	.660	BREF 4.0000 INCHES
101984	○	LARC UPAT 983 AMC WARP AROUND FIN MODEL B1F6	45.000	1.750	.000	.660	XMRP .0000 INCHES
101985	○	ASDC-1015-170 AFAL FIN STUDY B1F6	45.000	1.750	.000	.660	YMRP .0000 INCHES
101986	○	LARC UPAT 983 AMC WARP AROUND FIN MODEL B1F6	45.000	1.750	.000	.660	ZMRP .0000 INCHES
101987	○	ASDC-1015-170 AFAL FIN STUDY B1F6	45.000	1.750	.000	.660	SCALE .0000



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(DISSES)	○	ASC-ICIS-170-AFATL FIN STUDY BIF6	.000	1.750	.000	.660	SREF 12.5660 SQ. IN.
(ELXB2B)	◇	LASC UPAT 580 ARC WRAP AROUND FIN MODEL BIF6	22.500	1.750	.000	.660	LREF 4.0000 INCHES
(DISSES)	◇	ASC-ICIS-170-AFATL FIN STUDY BIF6	45.000	1.750	.000	.660	BREF 4.0000 INCHES
(ELXB2B)	△	LASC UPAT 580 ARC WRAP AROUND FIN MODEL BIF6	45.000	1.750	.000	.660	XMRP .0000 INCHES
							YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000

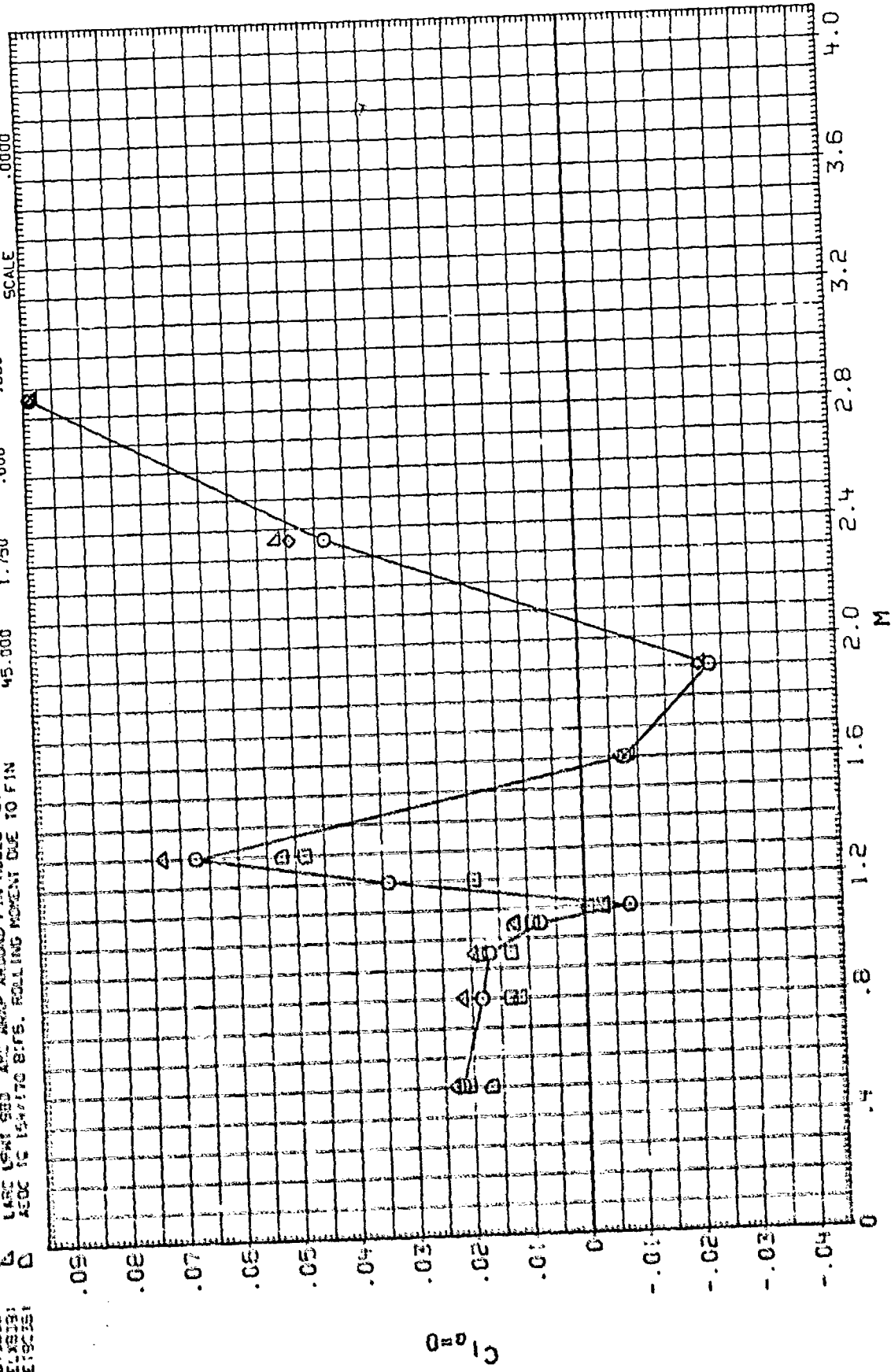


DATA SET SYMBOL CONFIGURATION DESCRIPTION

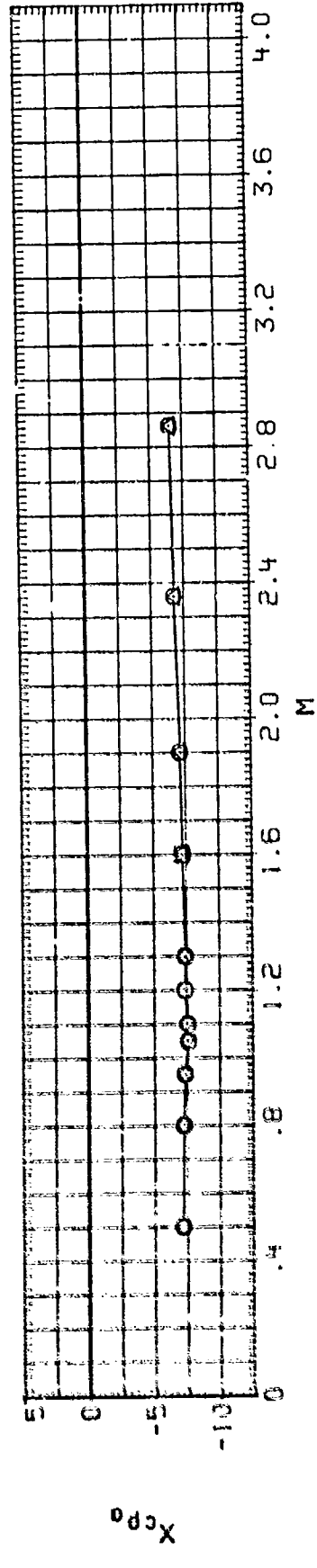
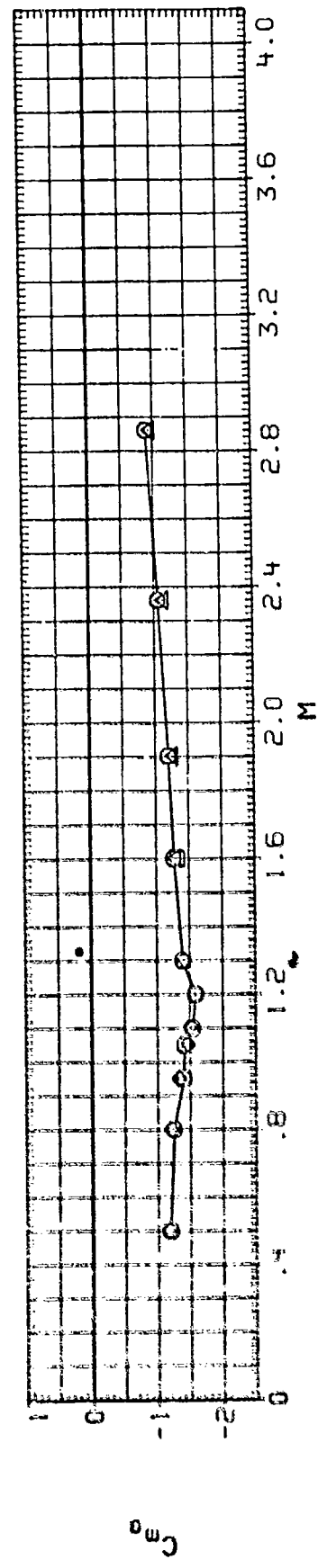
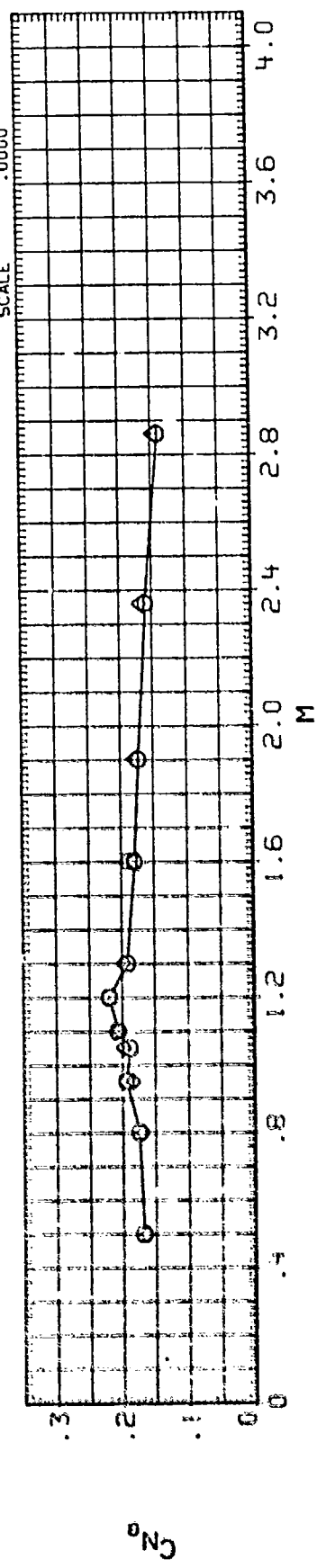
1019315: AEDC-10154/170. AFATL FIN STUDY BIF6
 1019315: AEDC-10154/170. AFATL FIN STUDY BIF6
 1019315: AEDC-10154/170. AFATL FIN STUDY BIF6
 1019315: AEDC-10154/170. AFATL FIN STUDY BIF6
 1019315: AEDC-10154/170. AFATL FIN STUDY BIF6
 1019315: AEDC-10154/170. AFATL FIN STUDY BIF6

PHI .000
 C/D 1.750
 LAMBDA .000
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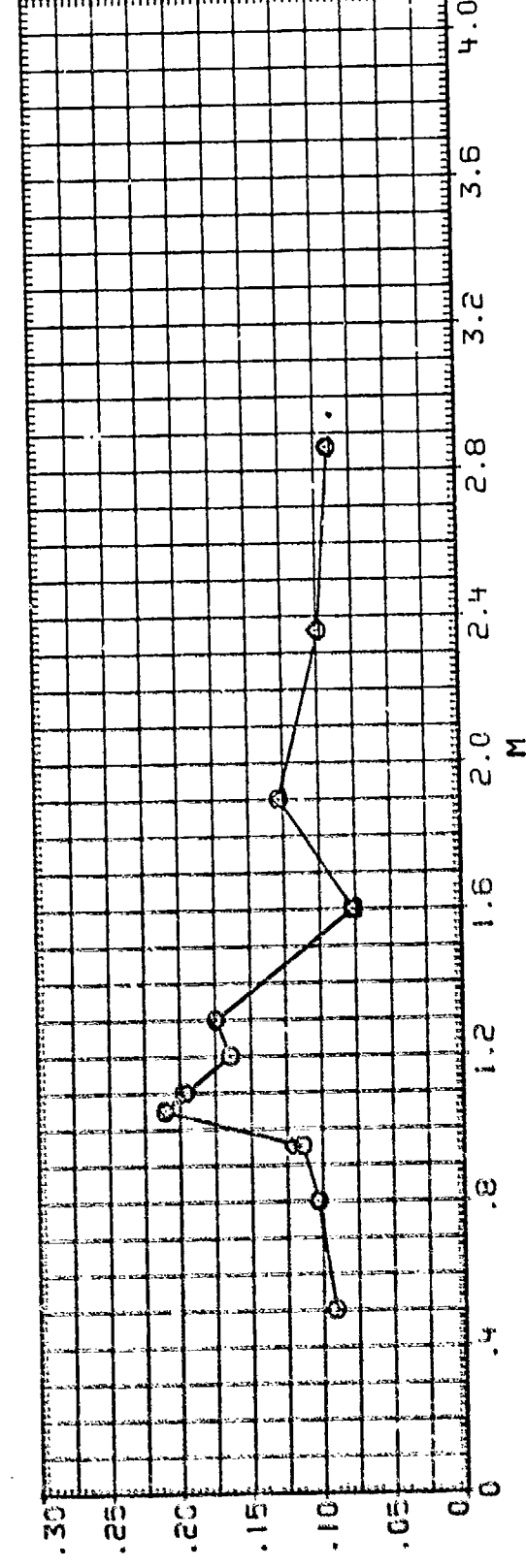
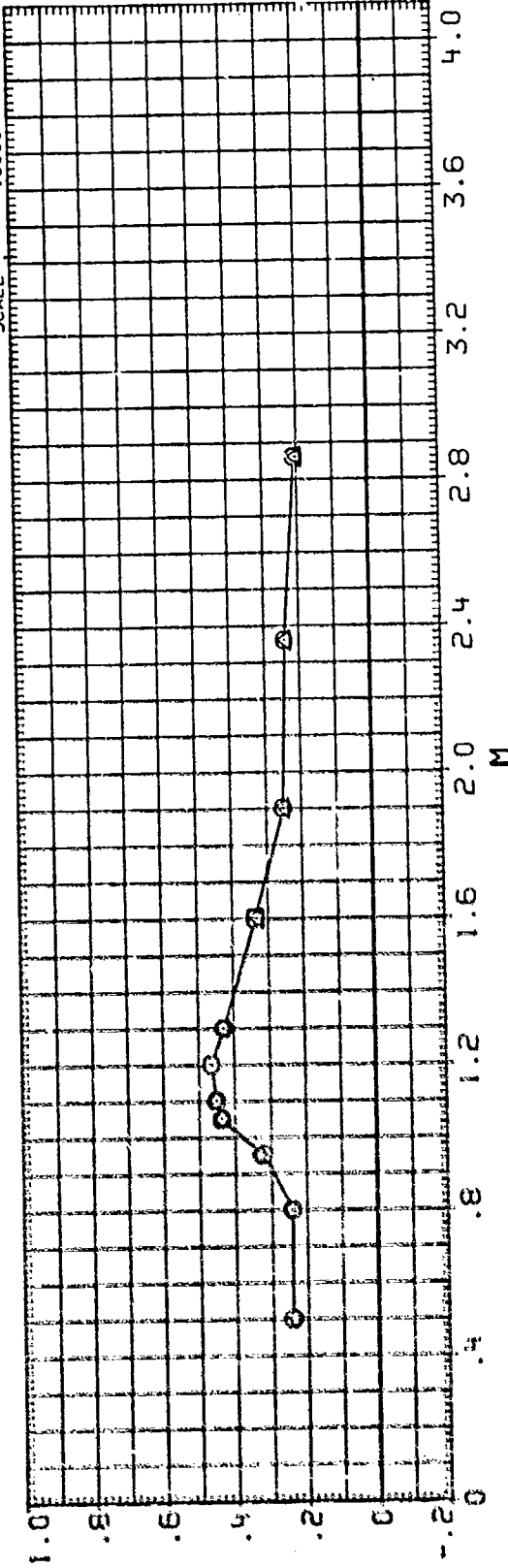
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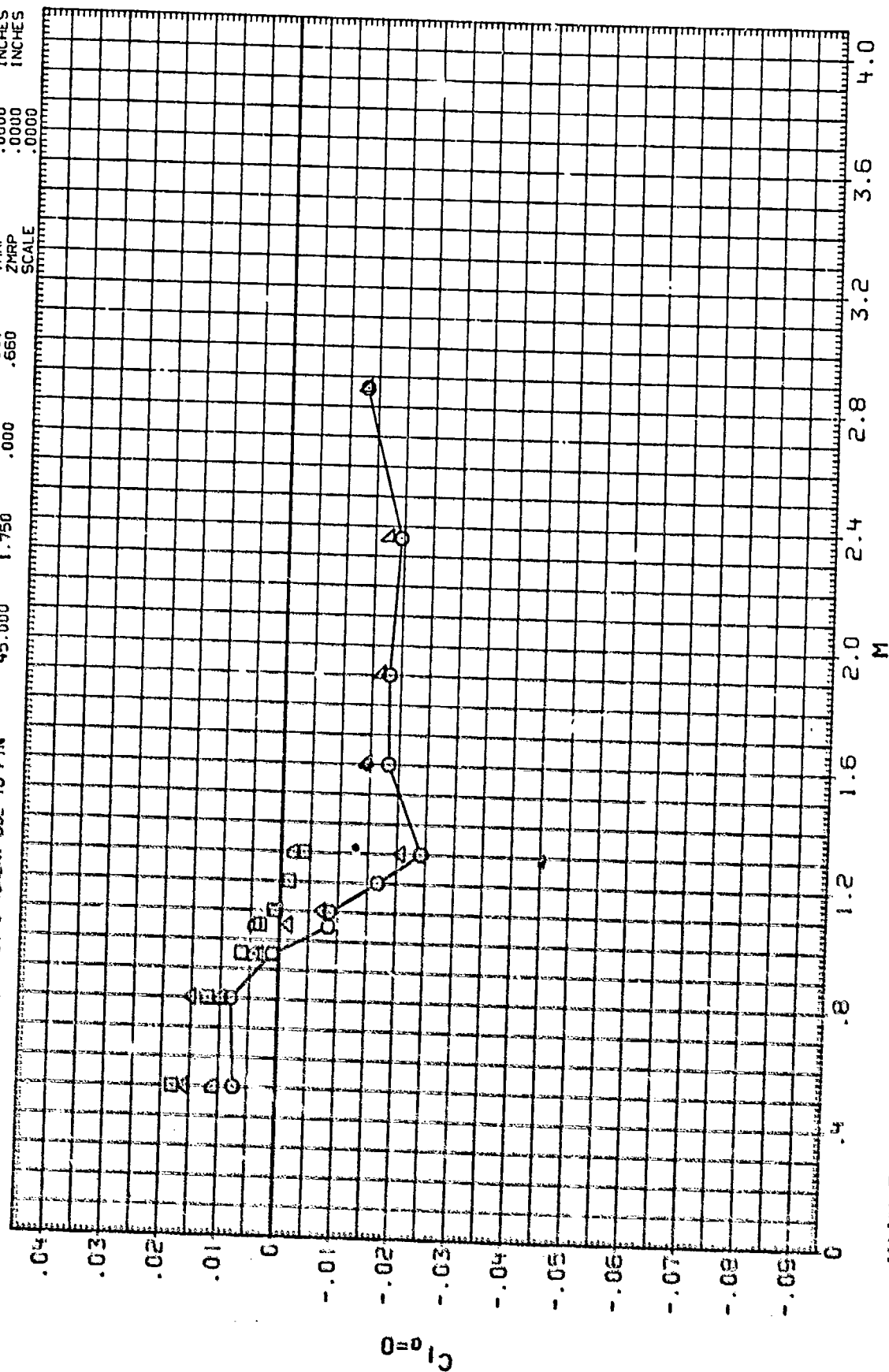
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
IC13B11	○	AEDC-TOTEN/170 AFATL FIN STUDY BIF7	.000	1.750	.000	.660	SREF 12.5660 SQ. IN.
IC13B12	○	LARC UPAT 983 AWC WRAP AROUND FIN MODEL BIF7	22.500	1.750	.000	.660	LREF 4.0000 INCHES
IC13B13	○	AEDC-IC15A/170 AFATL FIN STUDY BIF7	45.000	1.750	.000	.660	BREF 4.0000 INCHES
IC13B12	△	LARC UPAT 983 AWC WRAP AROUND FIN MODEL BIF7	45.000	1.750	.000	.660	YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/20	REFERENCE INFORMATION
10193171	○	AIRC-1C154/170 AFAIL FIN STUDY BIF7	.000	1.750	.000	.660	SREF 12.5660 50. IN.
10193171	○	LASC UPAT 883 AWC WRAP AROUND FIN MODEL BIF7	22.500	1.750	.000	.660	LREF 4.0000 INCHES
10193171	○	AIRC-1C154/170 AFAIL FIN STUDY BIF7	45.000	1.750	.000	.660	EREF 4.0000 INCHES
10193171	○	LASC UPAT 883 AWC WRAP AROUND FIN MODEL BIF7	45.000	1.750	.000	.660	YMRP .0000 INCHES
10193171	○	LASC UPAT 883 AWC WRAP AROUND FIN MODEL BIF7	45.000	1.750	.000	.660	ZMRP .0000 INCHES
10193171	○	LASC UPAT 883 AWC WRAP AROUND FIN MODEL BIF7	45.000	1.750	.000	.660	SCALE .0000

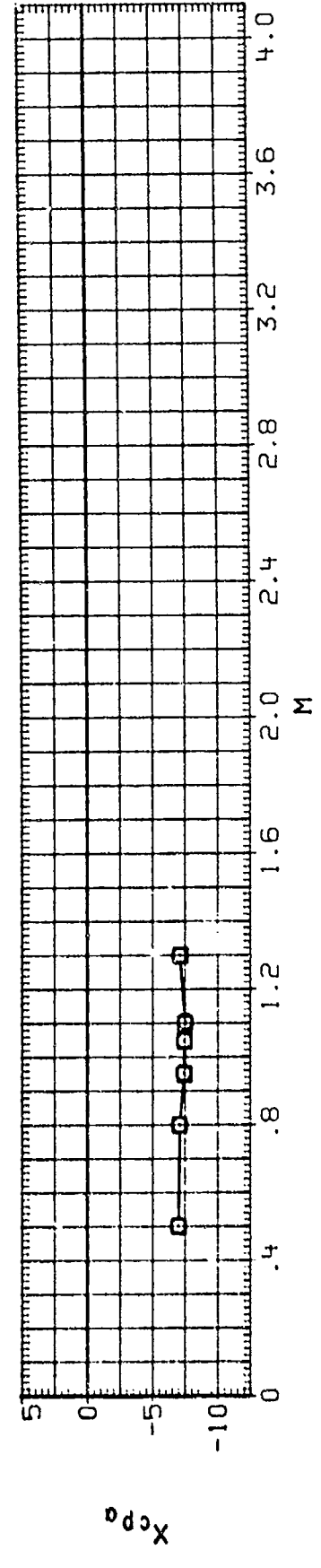
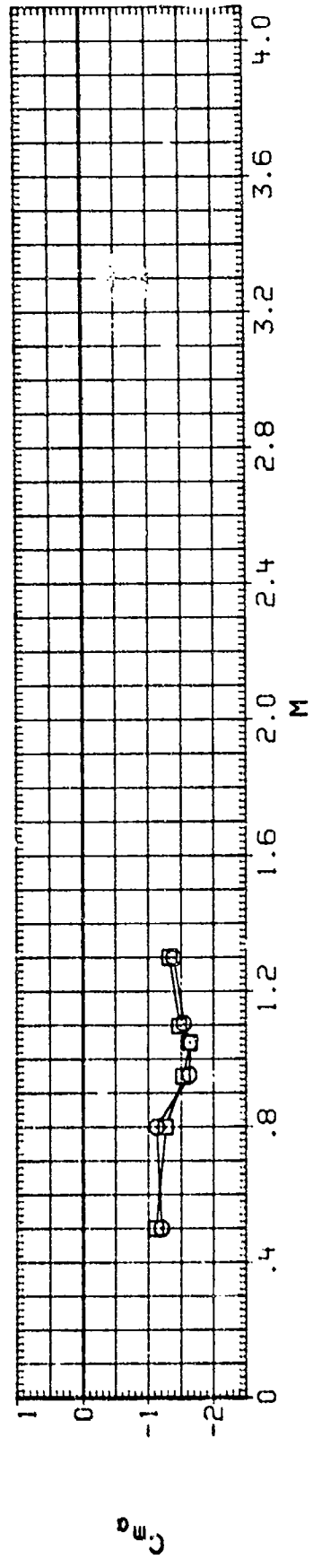
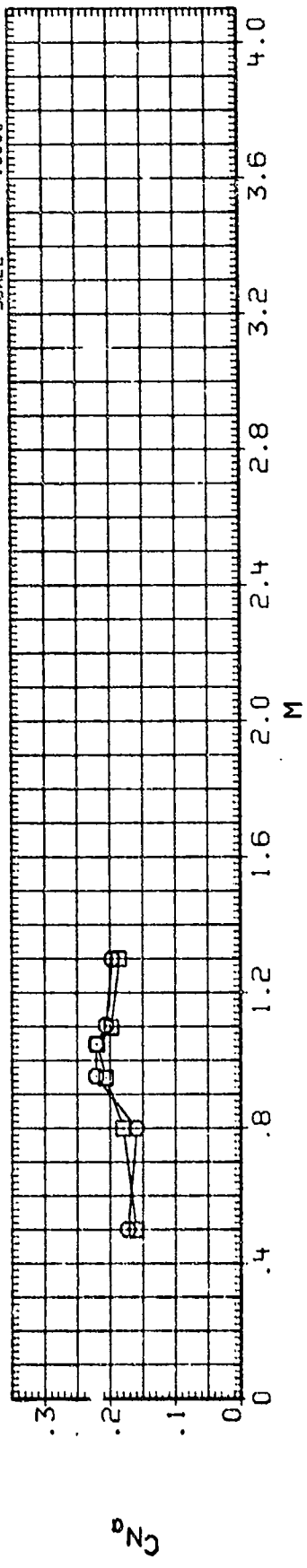


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(019837)	□	AEOC-IC15W/170.AFAIL FIN STUDY B1F7	.000	1.750	.000	.650	SREF 12.5660 SQ. IN.
(019837)	□	AEOC IC 15W/170 B1F7. ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.650	LREF 4.0000 INCHES
(019837)	□	LARC UPAT 983 AOE WRAP AROUND FIN MODEL B1F7	22.500	1.750	.000	.650	BREF .0000 INCHES
(019837)	□	AEOC-IC15W/170.AFAIL FIN STUDY B1F7	45.000	1.750	.000	.650	YMRP .0000 INCHES
(019837)	□	LARC UPAT 983 AOE WRAP AROUND FIN MODEL B1F7	45.000	1.750	.000	.650	ZMRP .0000 INCHES
(019837)	□	AEOC IC 15W/170 B1F7. ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.650	SCALE .0000

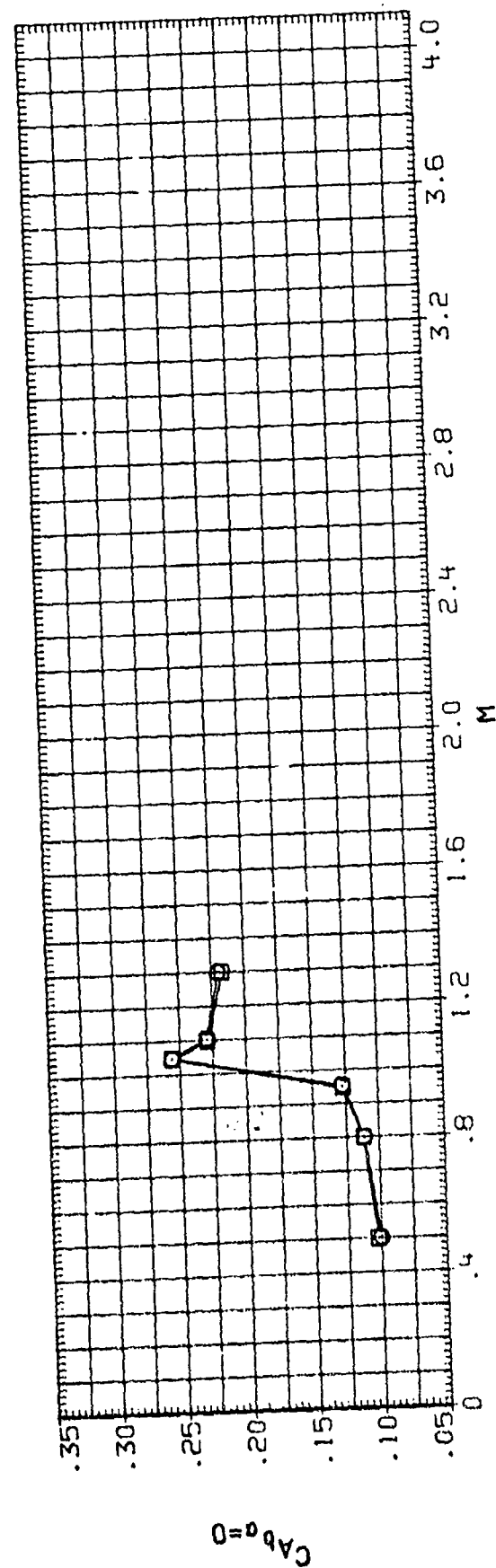
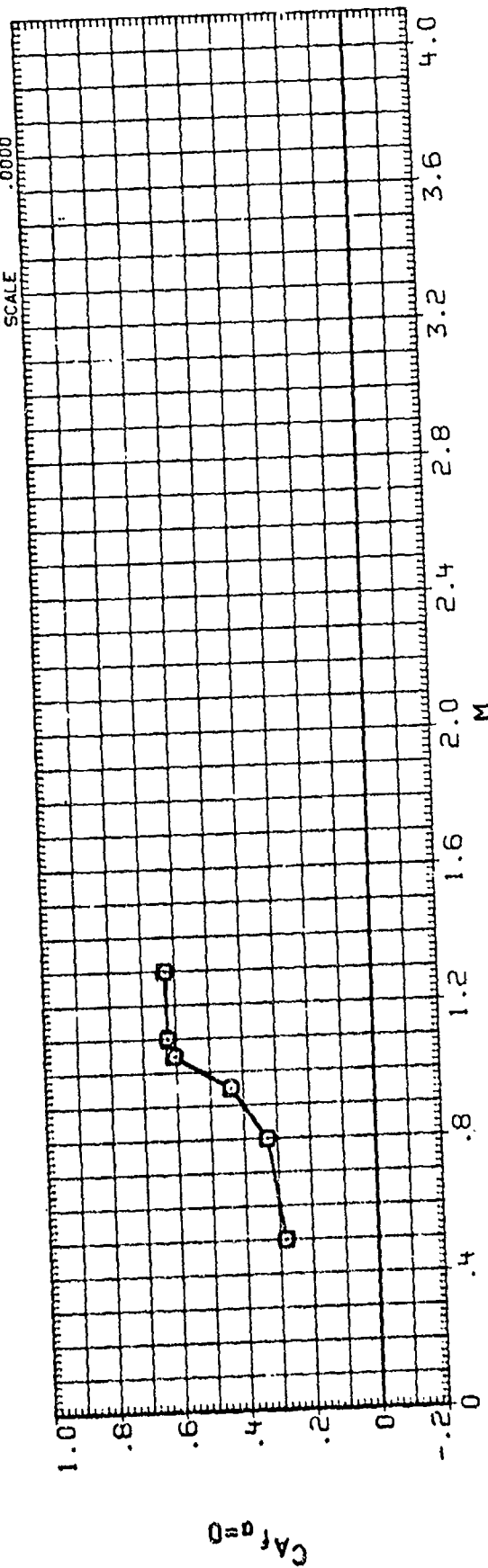


MAIN BALANCE COEFFICIENT SUMMARY, B1F7

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	P.I.	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(CT9845)	○	AEDC-TC154/170-AFATL FIN STUDY B1F8	.000	1.750	.000	.660	SREF 12.5660 SO. IN.
(DT9846)	□	AEDC-TC154/170-AFATL FIN STUDY B1F8	4' .000	1.750	.000	.660	LREF 4.0000 INCHES
							GREF 4.0000 INCHES
							XMRP .0000 INCHES
							YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



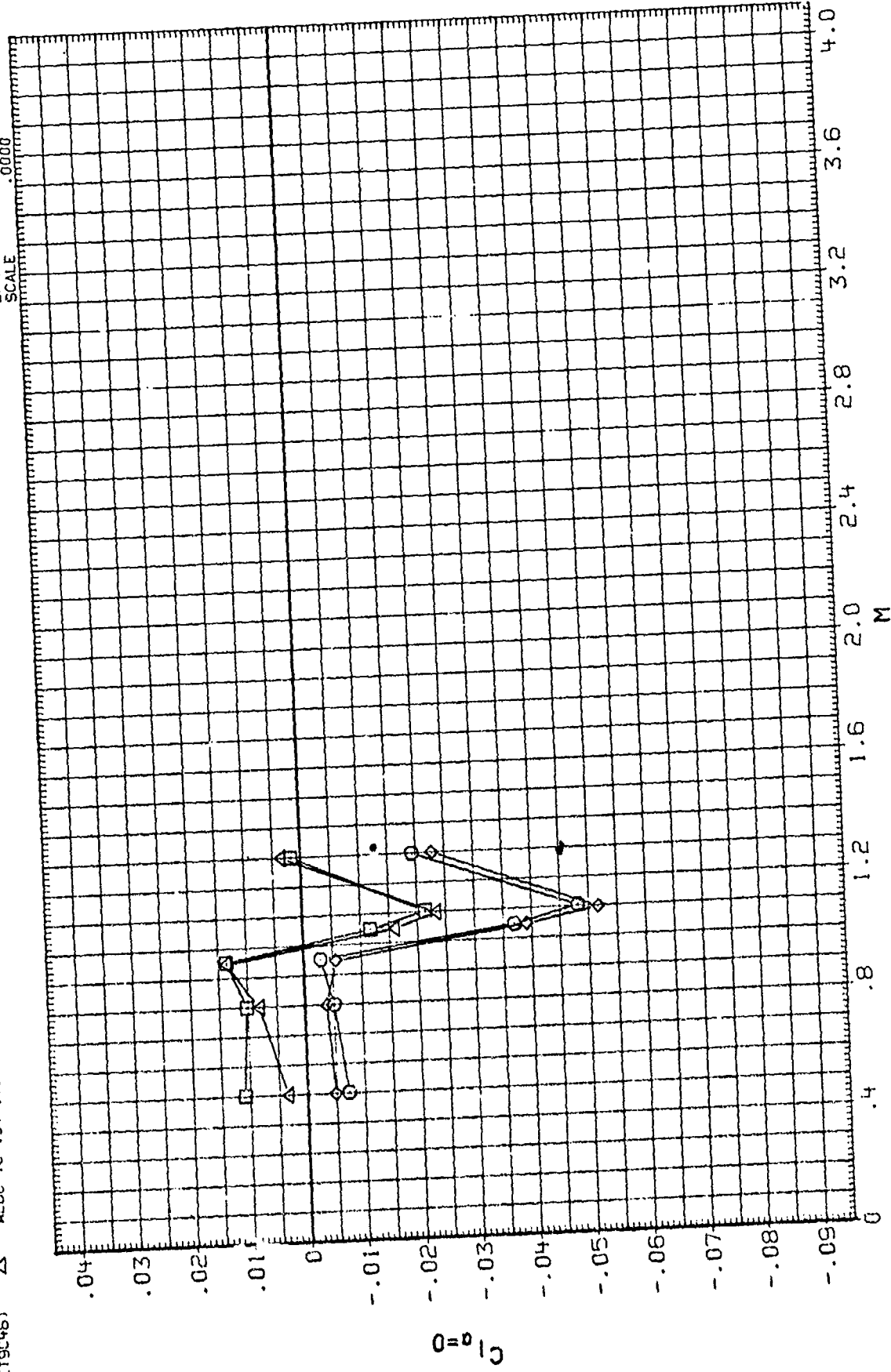
DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(CT985)5		AEDC-TC154/170.AFATL	FIN STUDY BIF8
(QT986)6		AEDC-TC154/170.AFATL	FIN STUDY BIF8



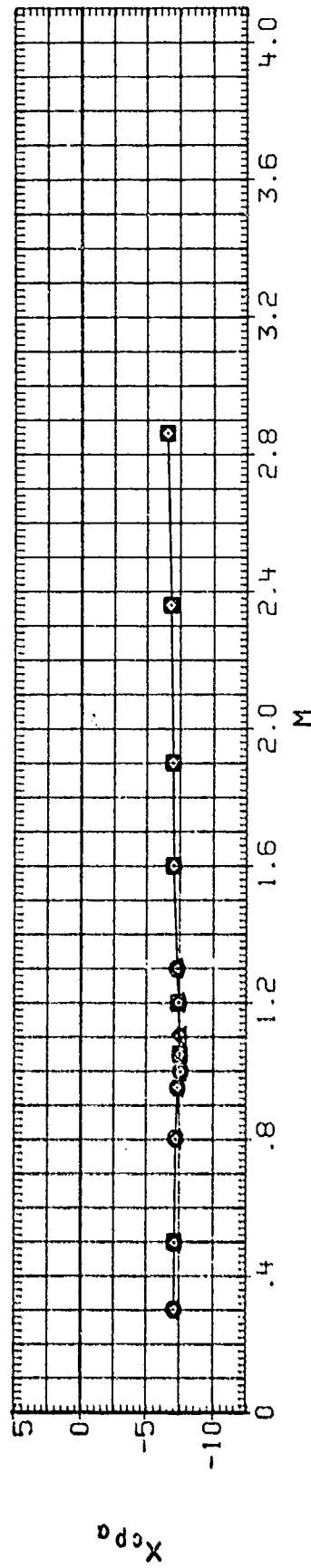
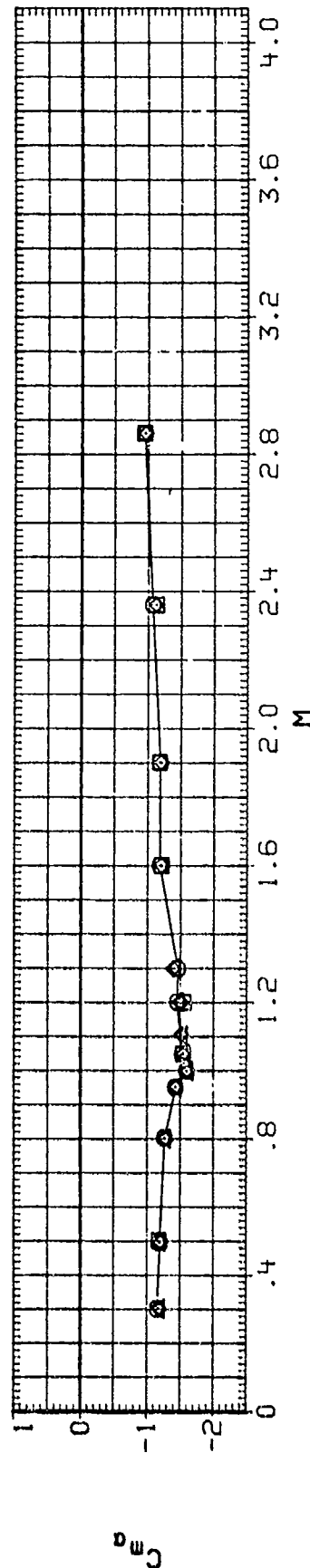
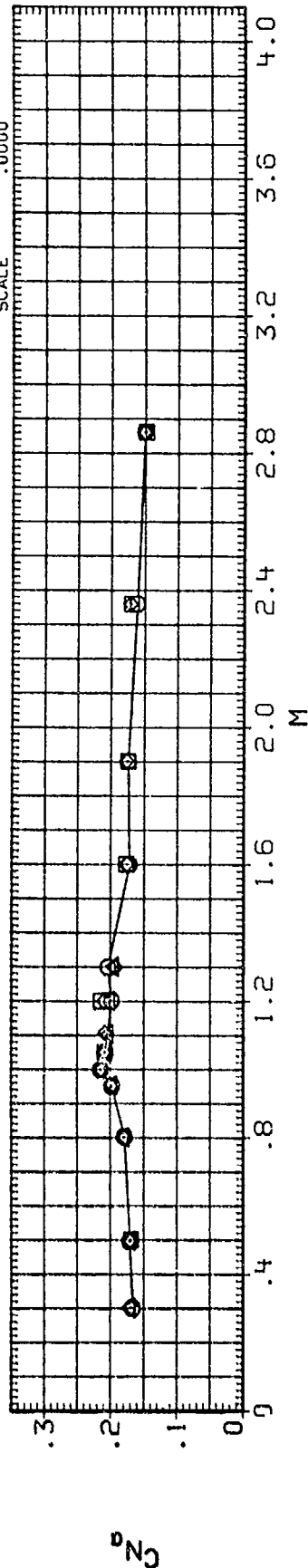
REFERENCE INFORMATION
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 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000

PHI .000
 C/D 1.750
 LAMBDA .000
 B/2D .660

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (CT9245) AEDC-TC154/170, AFATL FIN STUDY BIF8
 (DT9245) AEDC TC 154/170 BIF8, ROLLING MOMENT DUE TO FIN
 (DT9846) AEDC-TC154/170, AFATL FIN STUDY BIF8
 (ET9246) AEDC TC 154/170 BIF8, ROLLING MOMENT DUE TO FIN



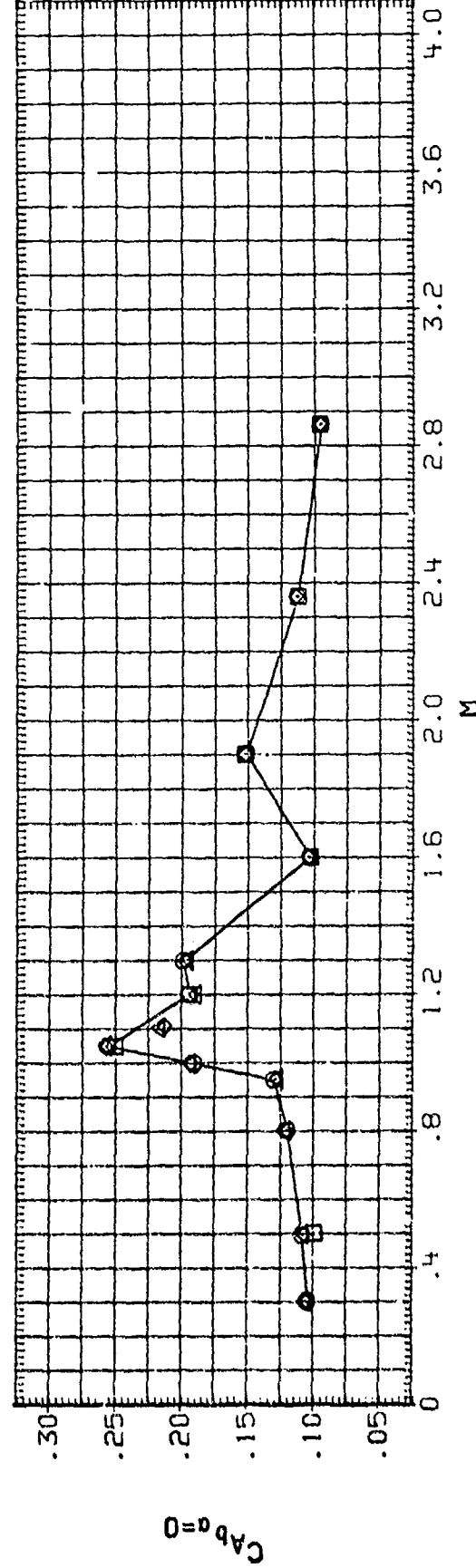
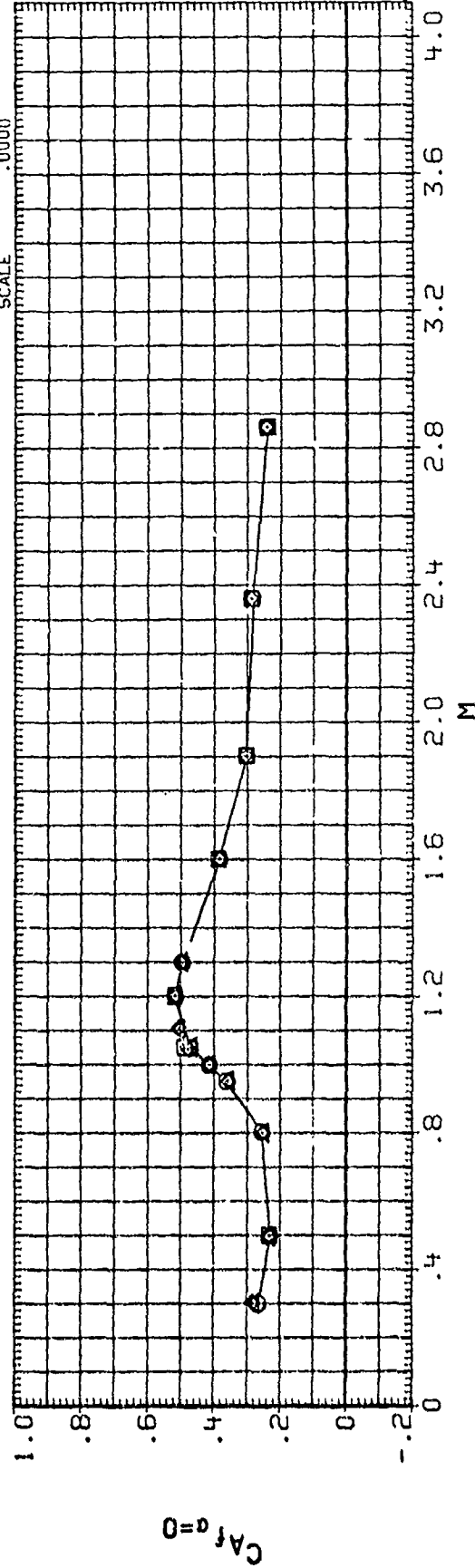
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBOA	B/2D	REFERENCE INFORMATION
(CT9S05)	○	DATASETS RT9B05 AND RLXB13. B1F9	.000	1.750	.000	.657	SREF 12.5660 50. IN.
(CT9S50)	□	DATASETS RT9B50 AND RLXB14. B1F9	22.500	1.750	.000	.657	LREF 4.0000 INCHES
(CT9S06)	◇	DATASETS RT9B06 AND RLXB15. B1F9	45.000	1.750	.000	.657	BREF 4.0000 INCHES
(CT9B07)	△	AEDC-TC154/170.AFATL FIN STUDY B1F9	180.000	1.750	.000	.657	YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (C19505) O DATASETS R19805 AND RLXB13. B1F9
 (C19550) □ DATASETS R19850 AND RLXB14. B1F9
 (C19506) ◇ DATASETS R19806 AND RLXB15. B1F9
 (C19307) △ AEDC-TC154/170. AFATL FIN STUDY B1F9

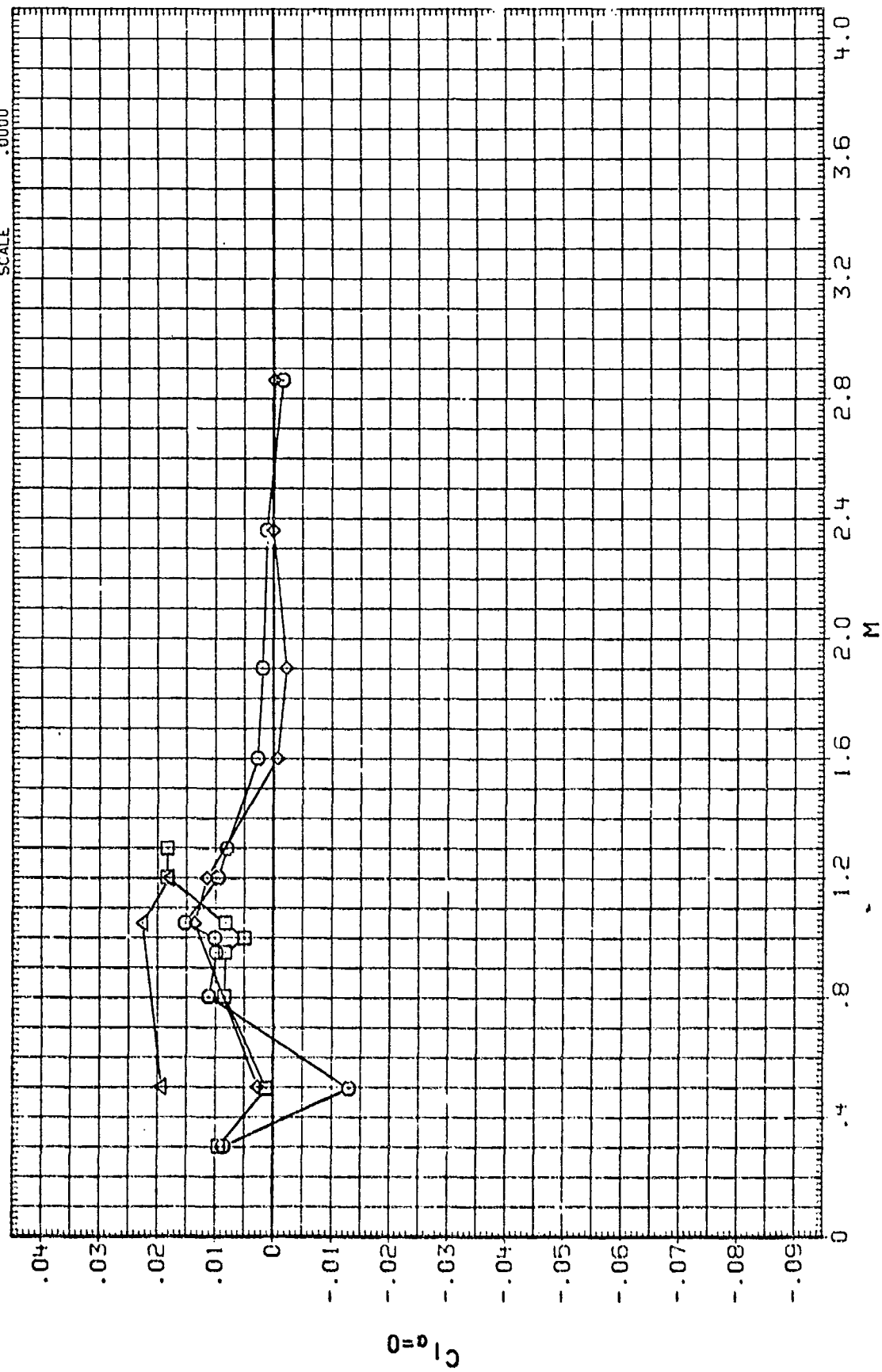
PHI C/D LAMBDA B/20
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 22.500 1.750 .000 .657
 45.000 1.750 .000 .657
 180.000 1.750 .000 .657

REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 LREF 4.0000 INCHES
 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



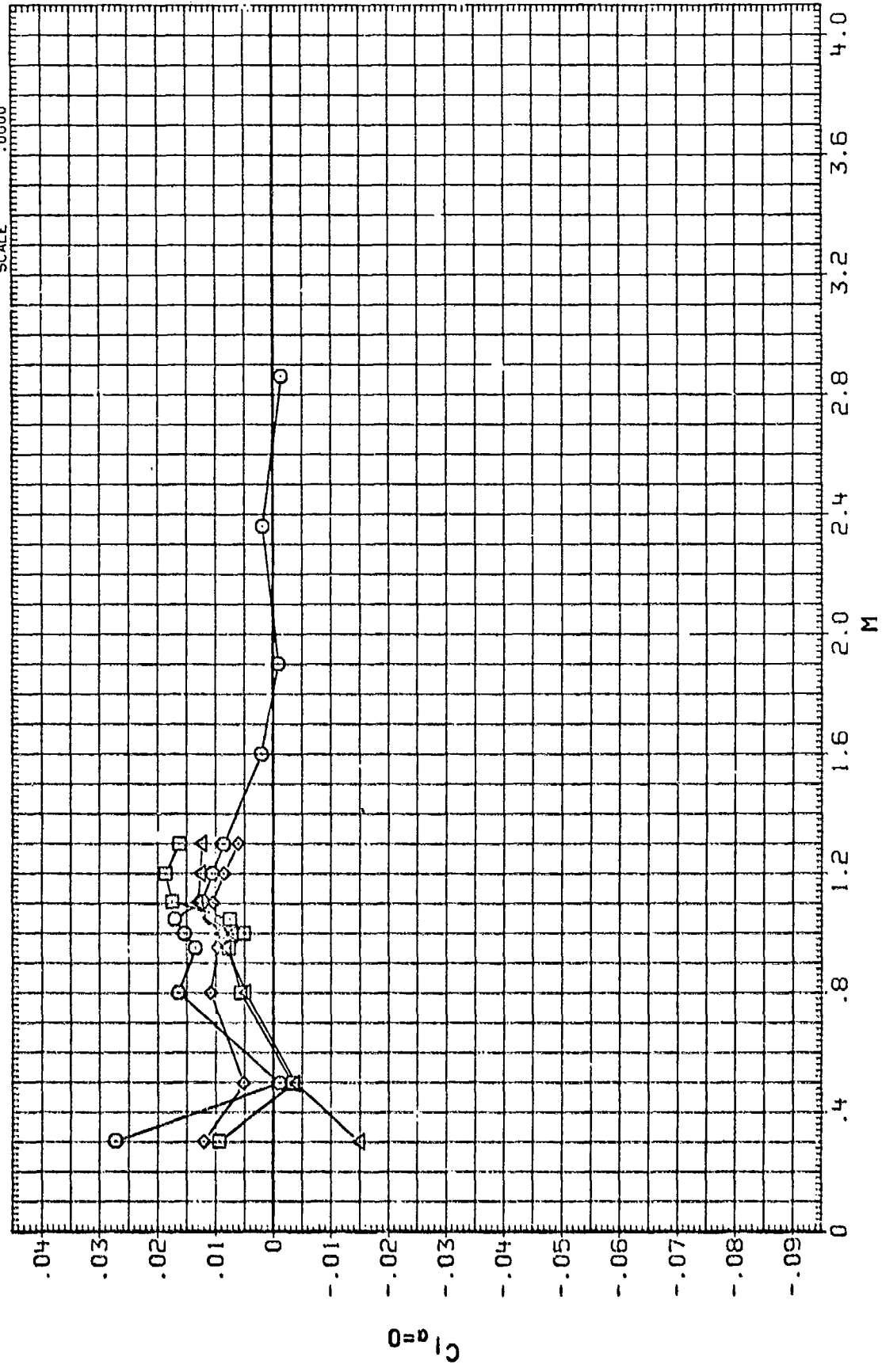
MAIN BALANCE COEFFICIENT SUMMARY, B1F9

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(CT9505)	○	DATASETS RT9805 AND RLX813, B1F9	.000	1.750	.000	.657	SREF 12.5660 SQ. IN.
(DT9505)	□	AECG IC 154/170 B1F9, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.657	LREF 4.0000 INCHES
(CT9550)	◇	DATASETS RT9850 AND RLX814, B1F9	22.500	1.750	.000	.657	BREF 4.0000 INCHES
(DT9550)	△	AECG IC 154/170 B1F9, ROLLING MOMENT DUE TO FIN	22.500	1.750	.000	.657	XMRP .0000 INCHES
							YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B1F9

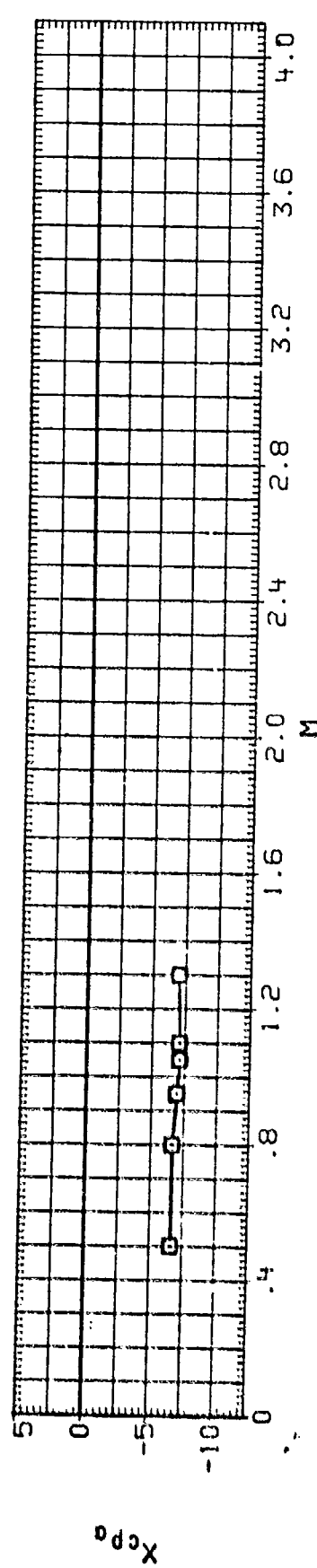
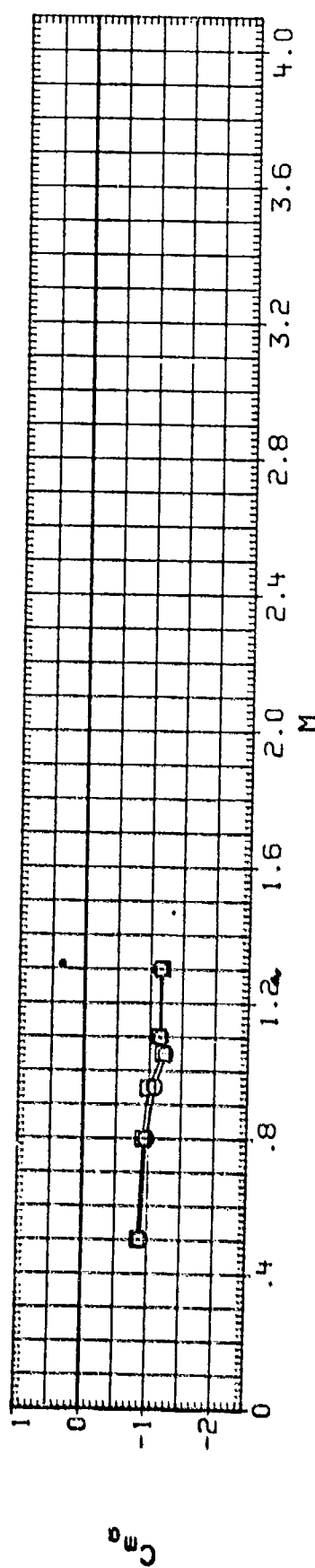
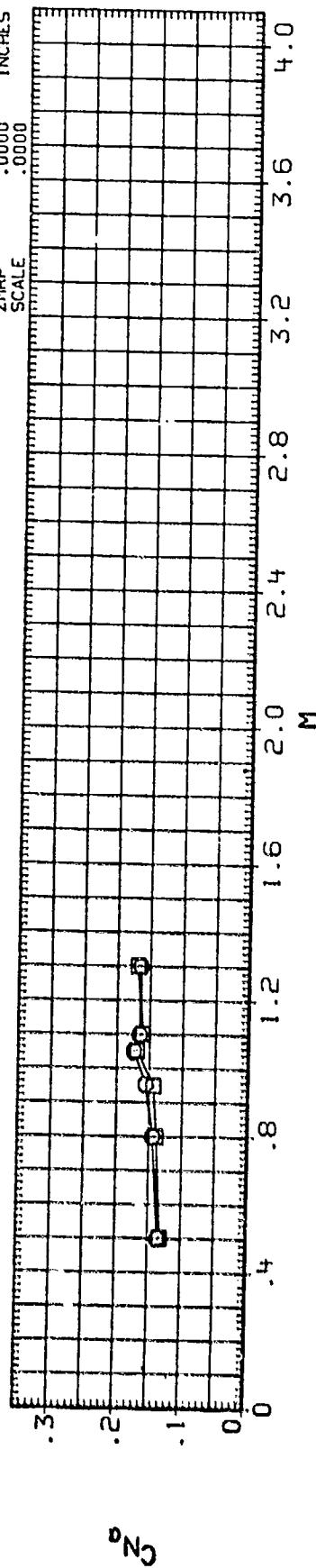
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(CT9505)	○	DATASETS RT9805 AND RLXB15. B1F9	45.000	1.750	.000	.657	SREF 12.5660 SQ. IN.
(DT9506)	□	AEDC TC 154/170 B1F9. ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.657	I REF 4.0000 INCHES
(CT9507)	◇	AEDC TC154/170. AFATL FIN STUDY B1F9	180.000	1.750	.000	.657	BREF 4.0000 INCHES
(DT9507)	△	AEDC TC 154/170 B1F9. ROLLING MOMENT DUE TO FIN	180.000	1.750	.000	.657	YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B1F9

DATA SET SW60L CONFIGURATION DESCRIPTION
 (C19339) ☐ AEDC-TC154/170.AFATL FIN STUDY B1F10
 (C19340) ☐ AEDC-TC154/170.AFATL FIN STUDY B1F10

PHI	C/D	LAMBDA	B/20	REFERENCE INFORMATION
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45.000	1.750	.000	.610	LREF 4.0000 INCHES
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				SCALE .0000

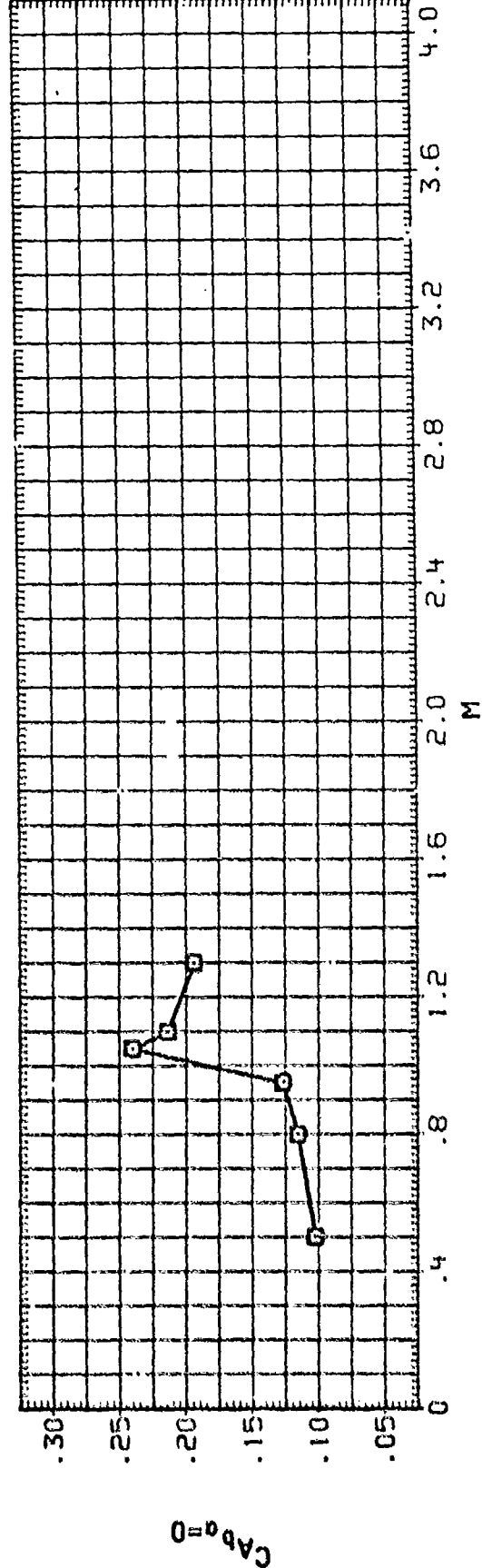
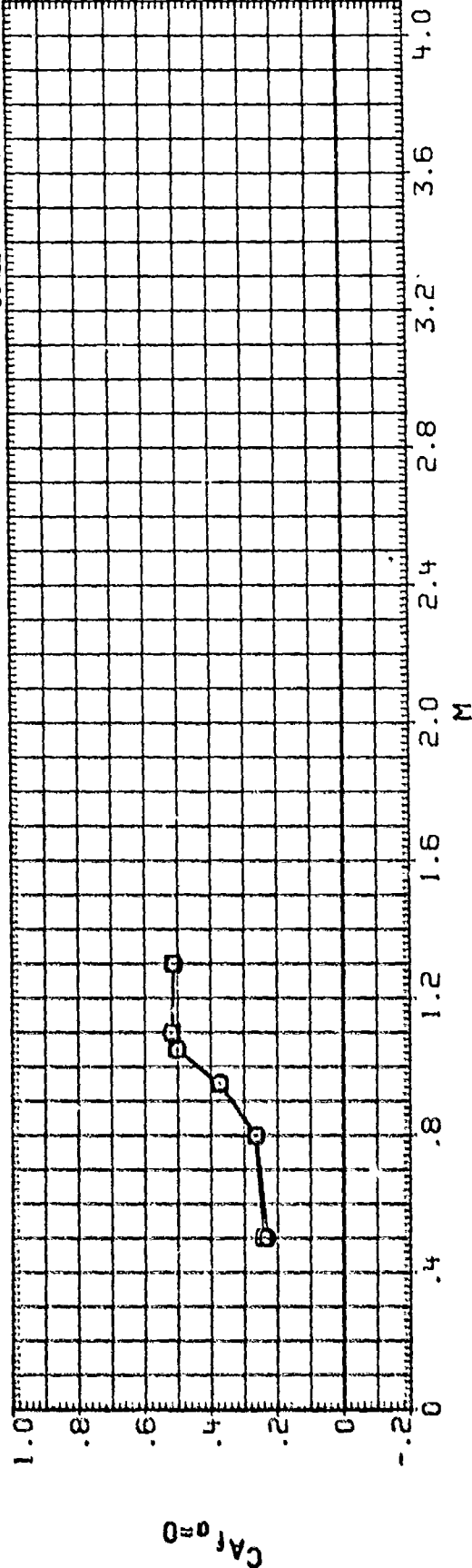


MAIN BALANCE COEFFICIENT SUMMARY, B1F10

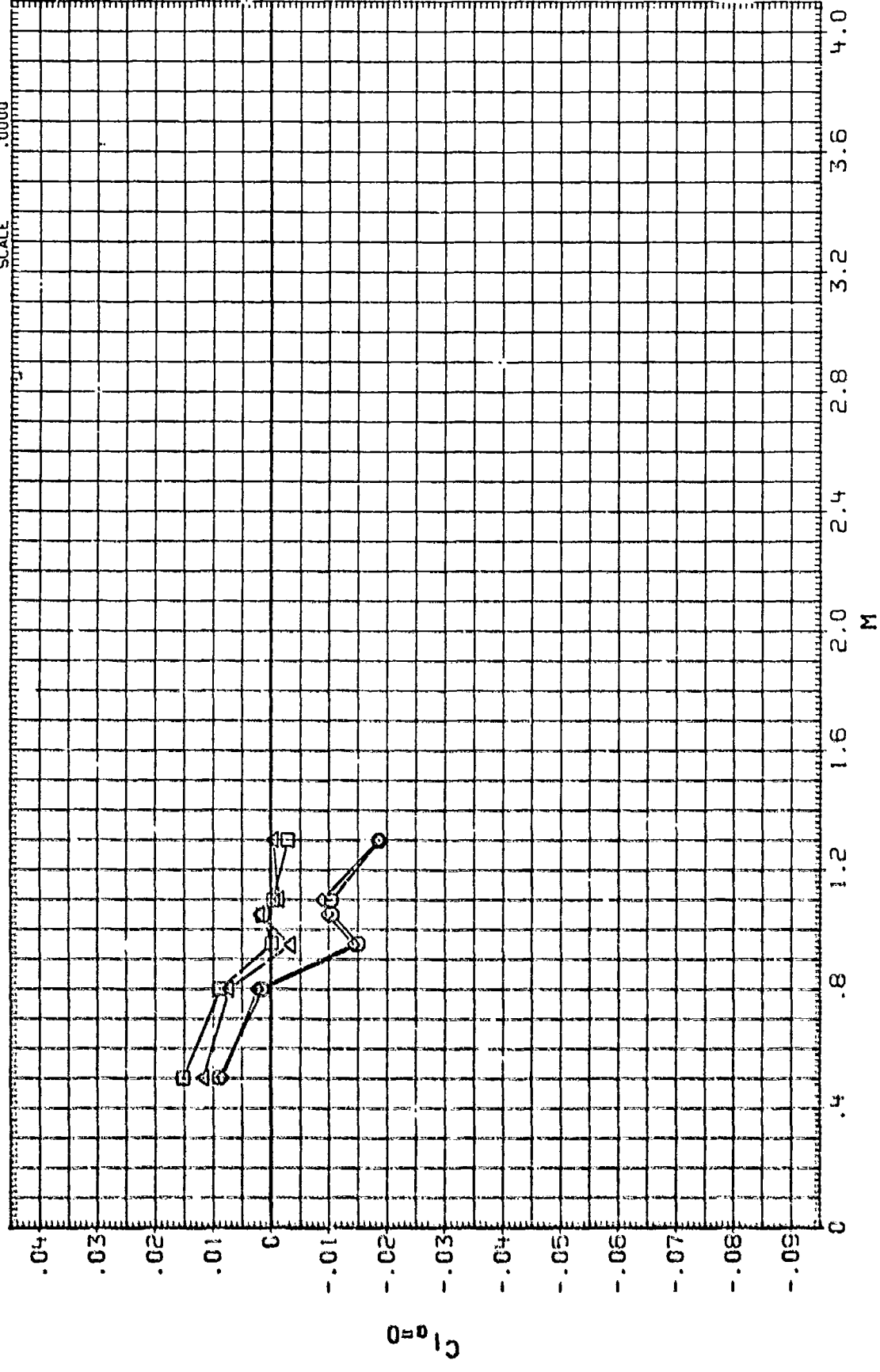
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 (CT9239) O AEDC-TC154/170.AFATL FIN STUDY B1F10
 (CT9240) □ AEDC-TC154/170.AFATL FIN STUDY B1F10

PHI C/D LAMBDA B/20
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 45.000 1.750 .000 .610

REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
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 BREF 4.0000 INCHES
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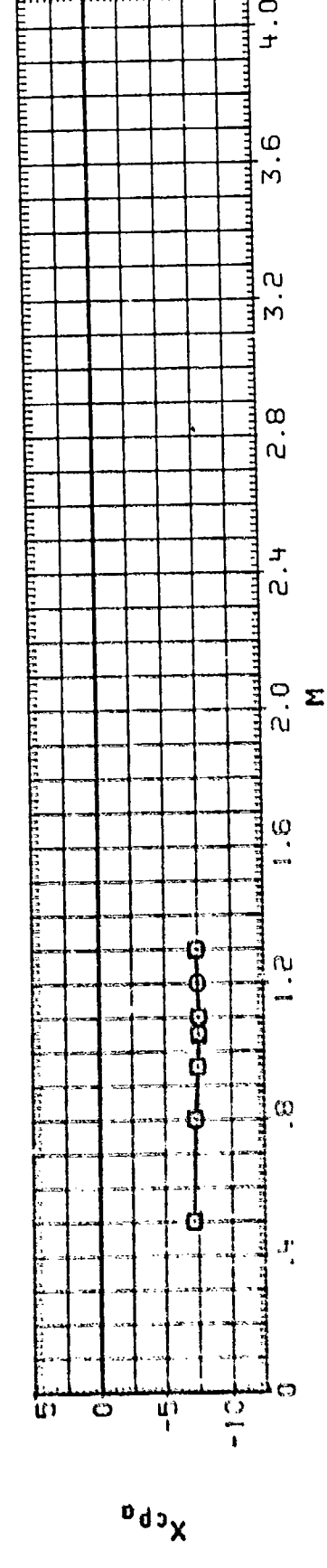
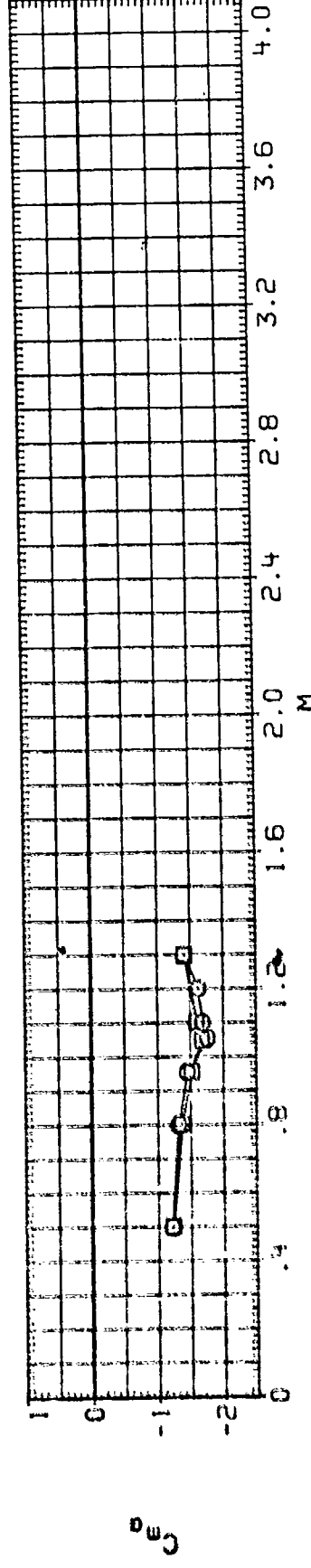
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION	SO. IN.
(C19B39)	AEDC-TC154/170 AFATL FIN STUDY BIF10	.000	1.750	.000	.610	SREF	12.5660
(D19B39)	AEDC TC 154/170 BIF10. ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.610	LREF	4.0000
(C19B43)	AEDC-TC154/170 AFATL FIN STUDY BIF10	45.000	1.750	.000	.610	BREF	4.0000
(D19B43)	AEDC TC 154/170 BIF10. ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.610	XMRP	.0000
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						ZMRP	.0000
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MAIN BALANCE COEFFICIENT SUMMARY, BIF10

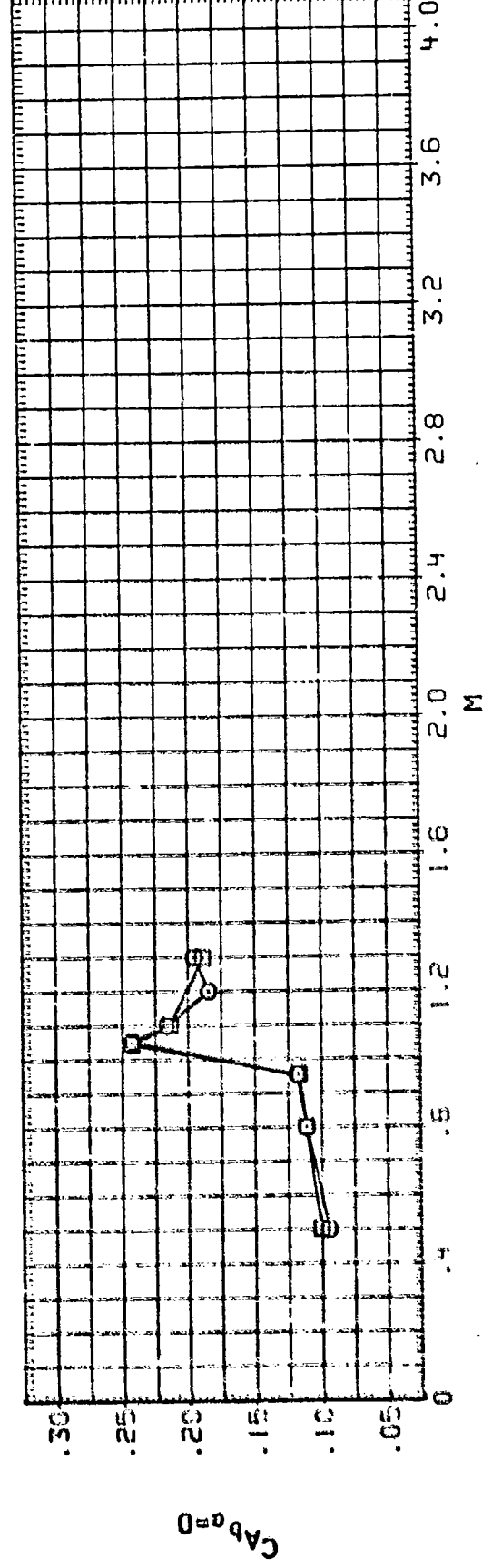
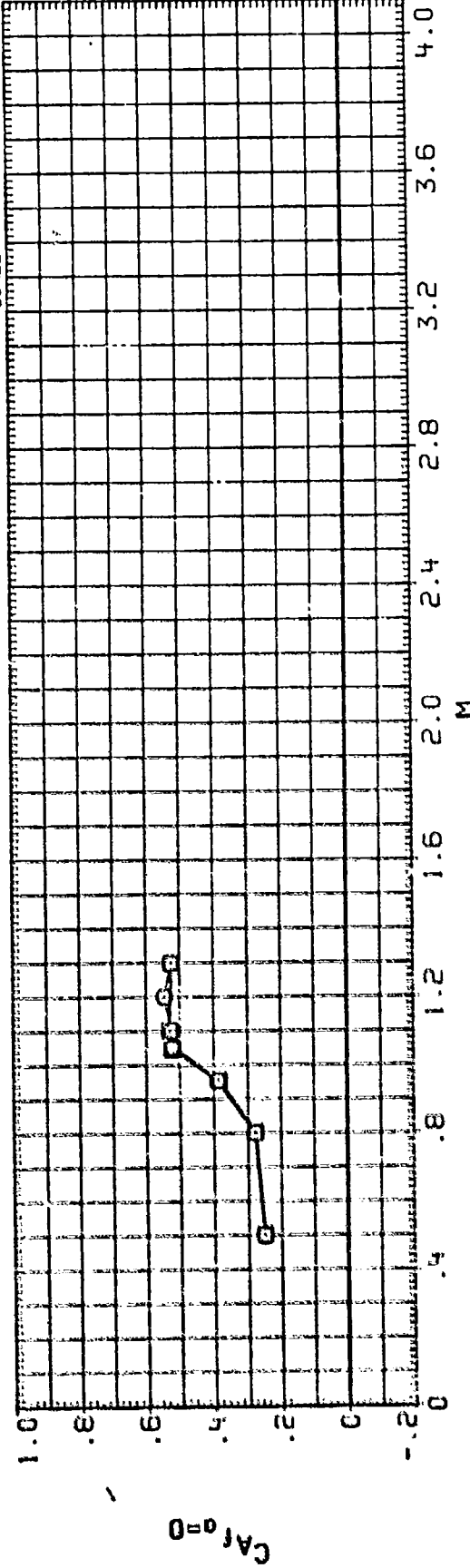
Graph showing the relationship between $C_N \alpha$ (Y-axis, ranging from 0 to 3) and M (X-axis, ranging from 0 to 4.0). The data points, representing polyisobutylene in benzene, show a peak around $M \approx 1.2$.

M	$C_N \alpha$
0.4	1.8
0.8	2.0
1.0	2.1
1.1	2.2
1.2	2.3
1.3	2.2

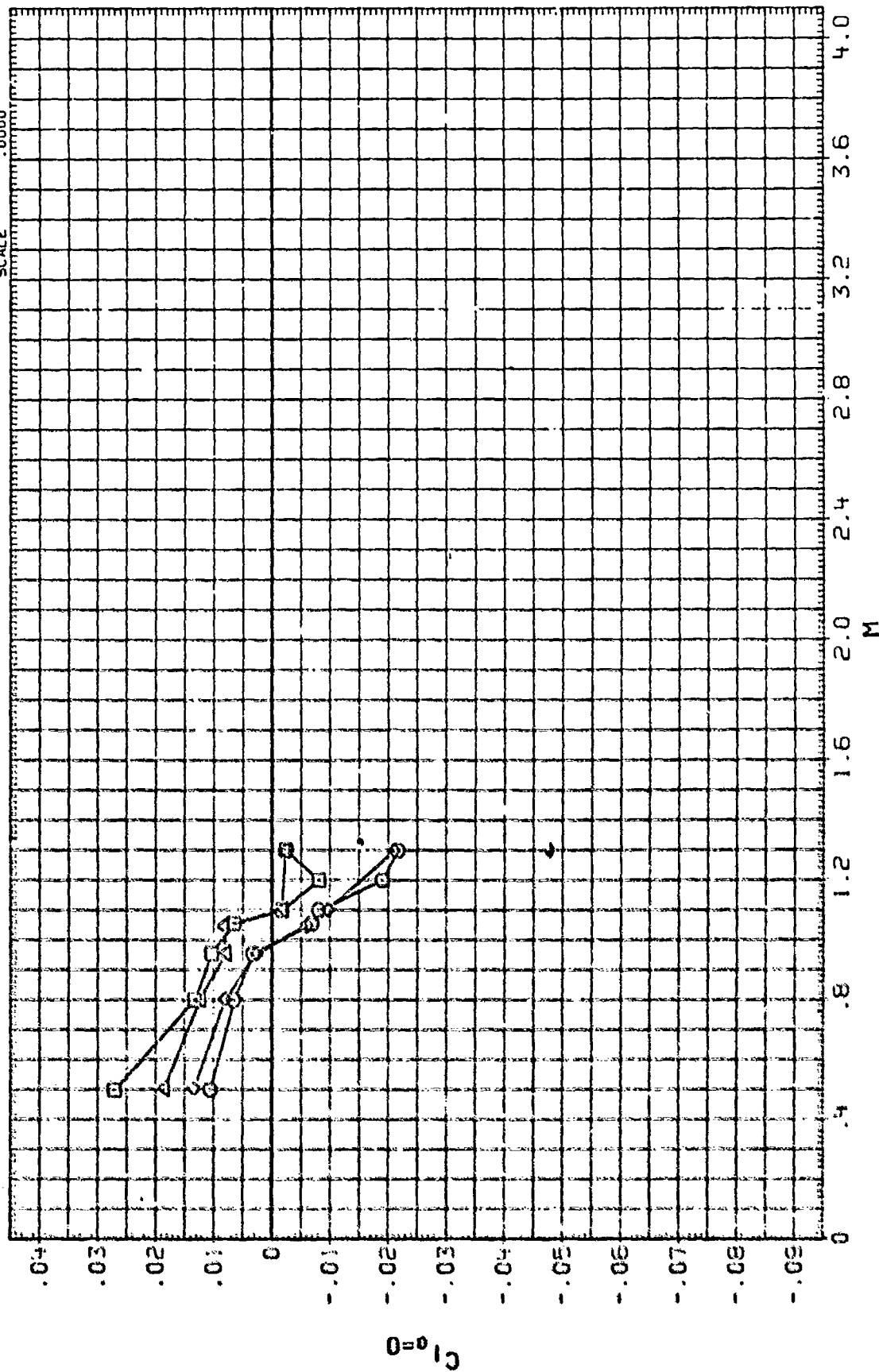


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H193-7) \square AEDC-1C154/170-AFATL FIN STUDY B1F11
 (H193-8) \square AEDC-1C154/170-AFATL FIN STUDY B1F11

PHI C/D LAMBDA B/2D REFERENCE INFORMATION
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 .000 .000 .000 .000 BREF 4.0000 INCHES
 .000 .000 .000 .000 XMRP .0000 INCHES
 .000 .000 .000 .000 YMRP .0000 INCHES
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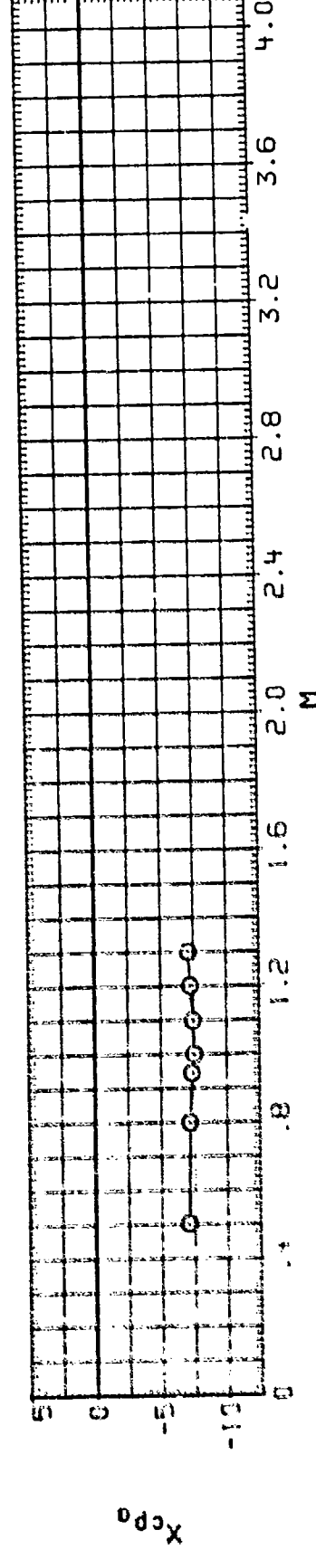
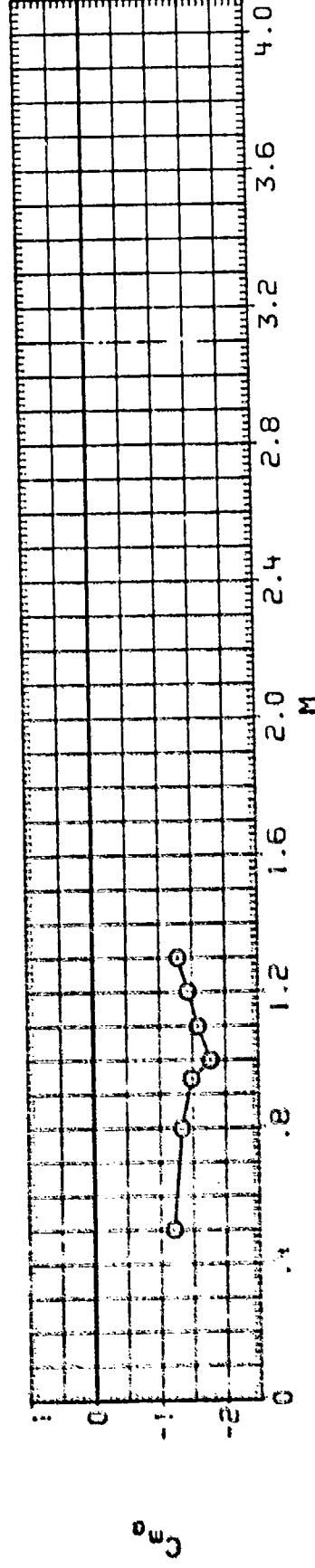
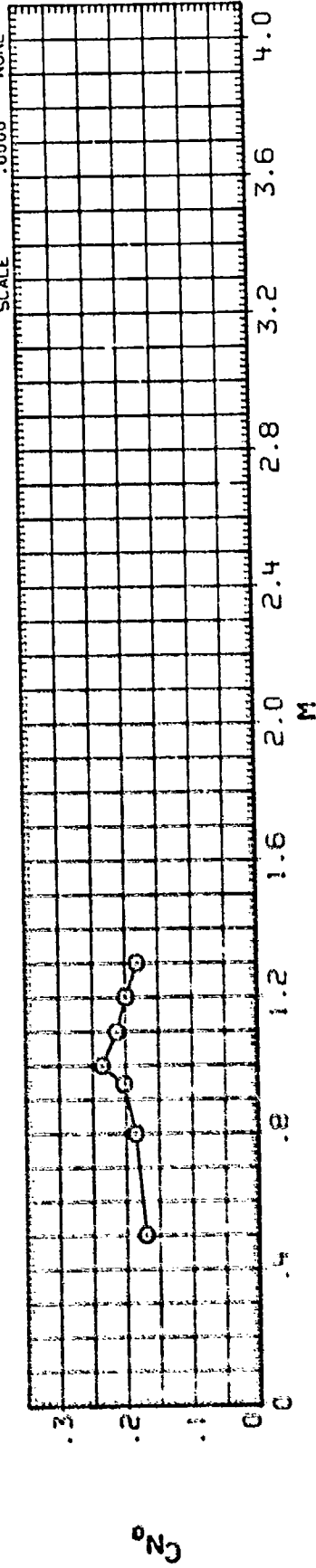
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INT35471	□	AEDC TC15471D AFATL FIN STUDY BIF11	.000	1.750	.000	.648	SREF 12.5660 SO. IN.
INT35471	○	AEDC TC15471D BIF11, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.648	LREF 4.0000 INCHES
INT35481	△	AEDC TC15471D AFATL FIN STUDY BIF11	45.000	1.750	.000	.648	BREF 4.0000 INCHES
INT35481	△	AEDC TC15471D BIF11, ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.648	XMRP .0000 INCHES
							YMRP .0000 INCHES
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							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, BIF11

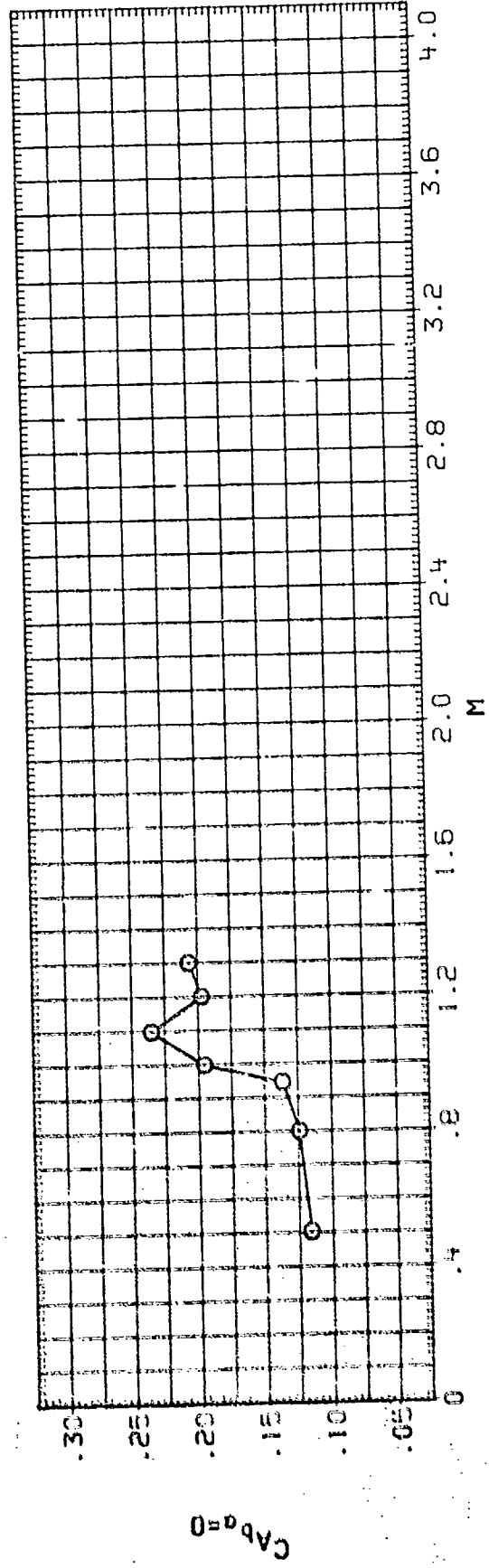
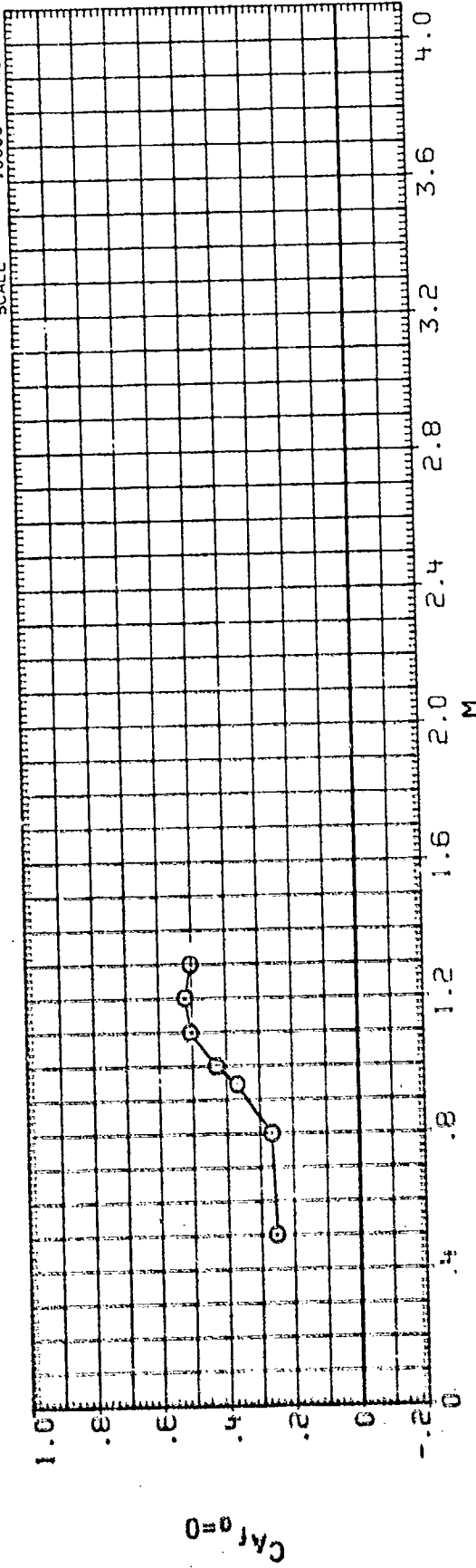
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REFERENCE INFORMATION			
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XMRP	.0000	inches	
YMRP	.0000	inches	
ZMRP	.0000	inches	
SCALE	.0000	inches	NONE



DATA SET: SW82L CONFIGURATION DESCRIPTION: BIF12
 IC12233: C AEC-TC-222. NAF FIN STUDY. BIF12

PHI .000 C/D 1.730 LAMBDA 14.750 8/20 .657
 REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 LREF 4.0000 INCHES
 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
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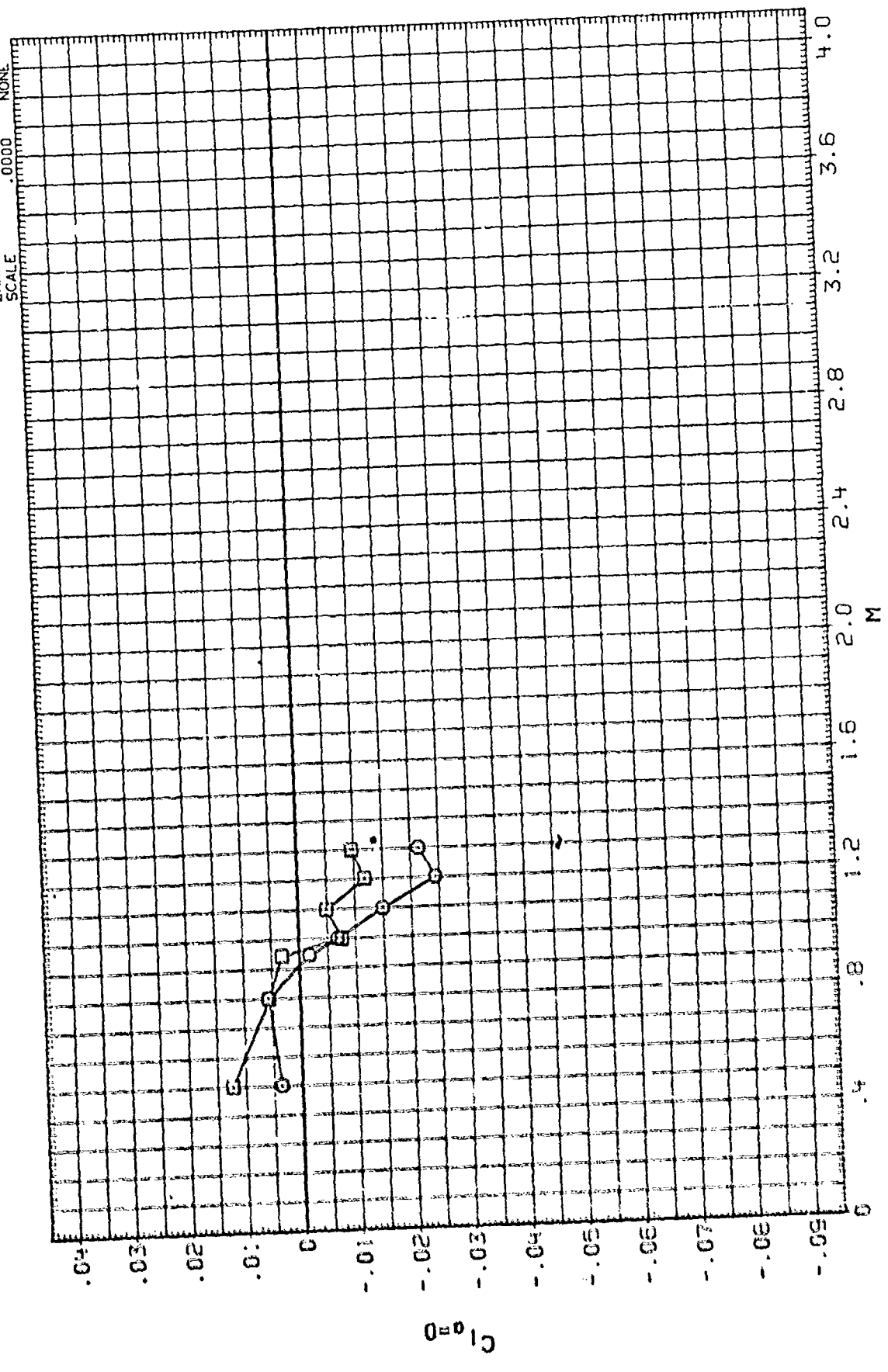


DATA SET SYMBOL: ☐
 (CYEC31: ☐
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CONFIGURATION DESCRIPTION:
 422C-10-202: WAF FIN STUDY. BIF12
 422C-10-202: BIF12. ROLLING MOMENT DUE TO FIN

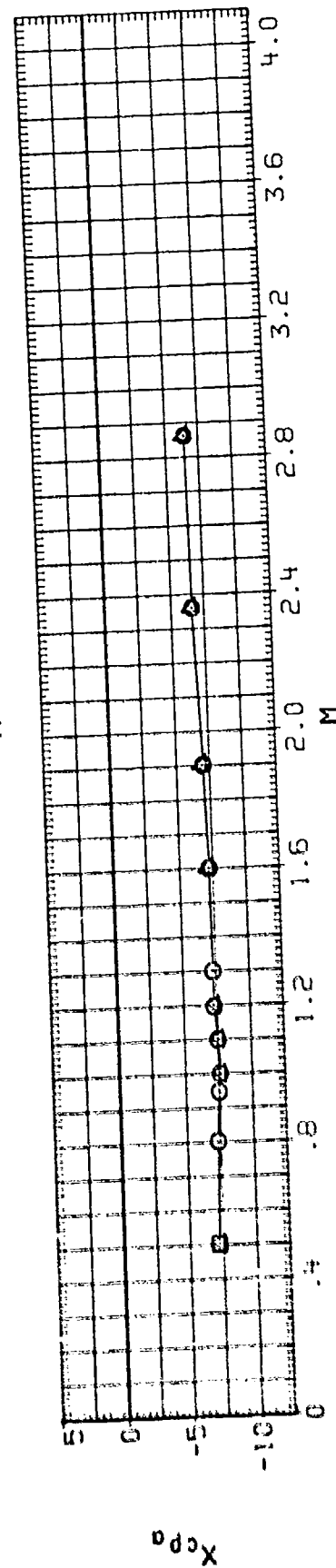
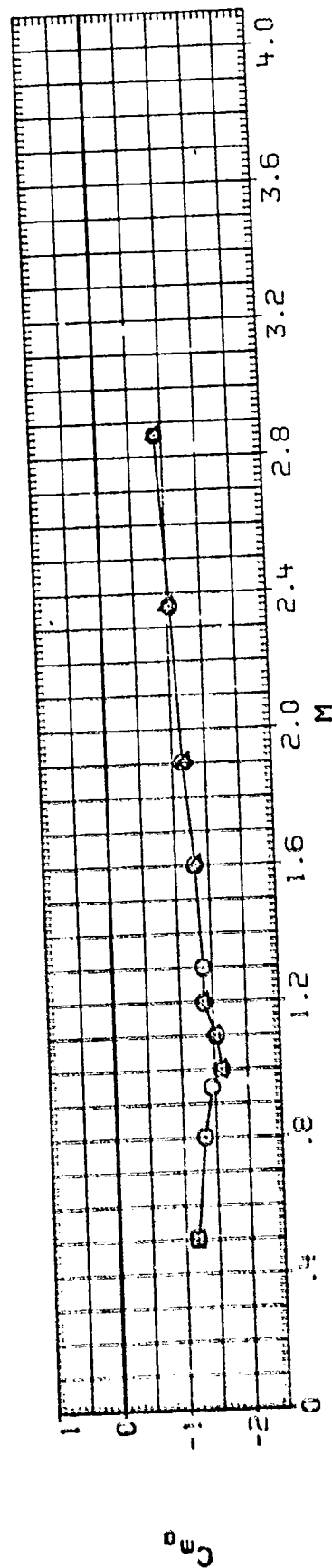
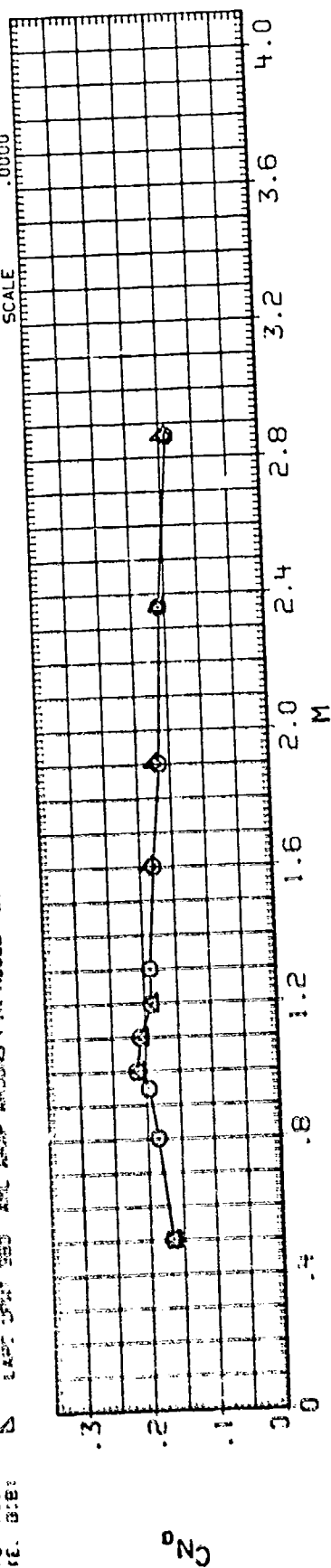
PHI: .000
 C/D: 1.750
 LAMBDA: 14.750
 B/2D: .657

REFERENCE INFORMATION
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 BREF: 4.0000
 XMRP: .0000
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 SCALE: NONE

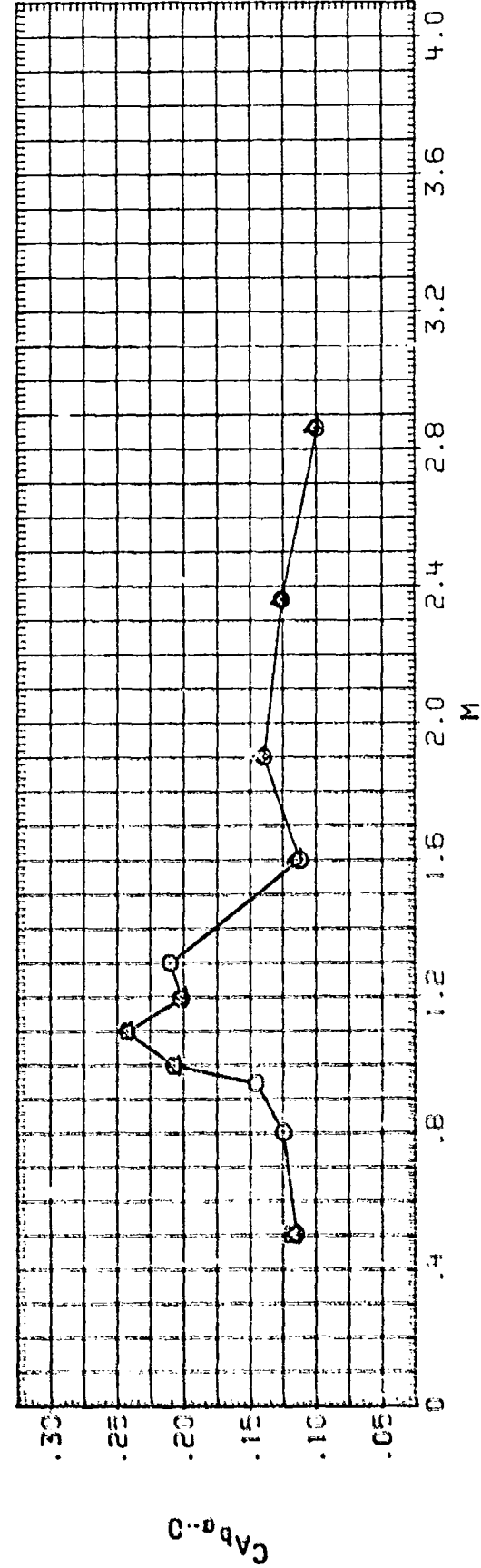
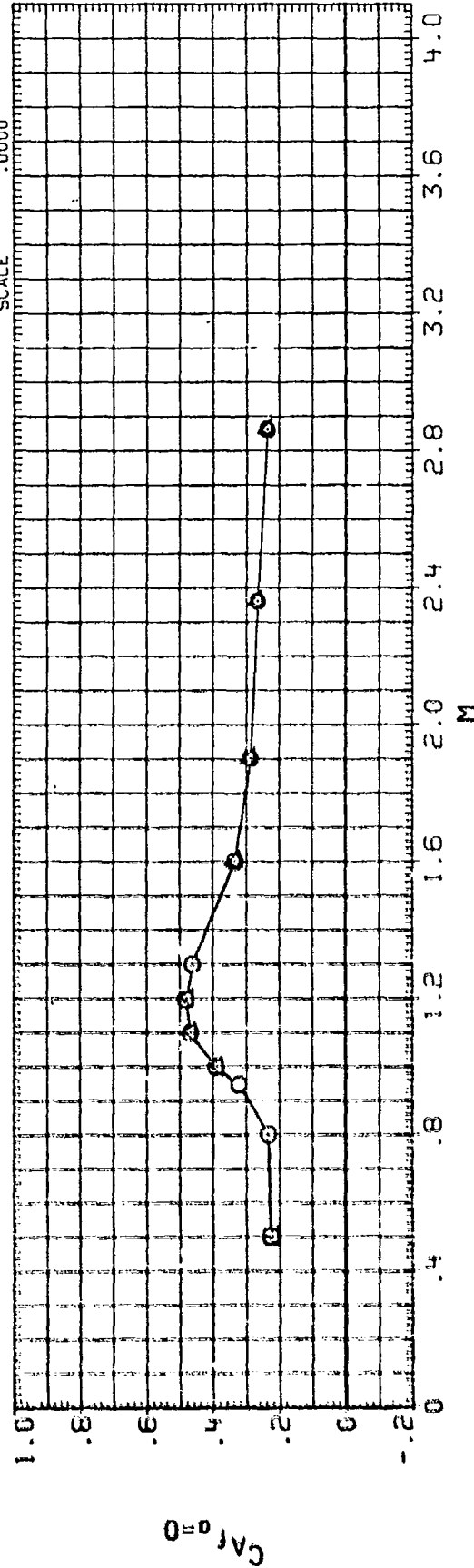


MAIN BALANCE COEFFICIENT SUMMARY, BIF12

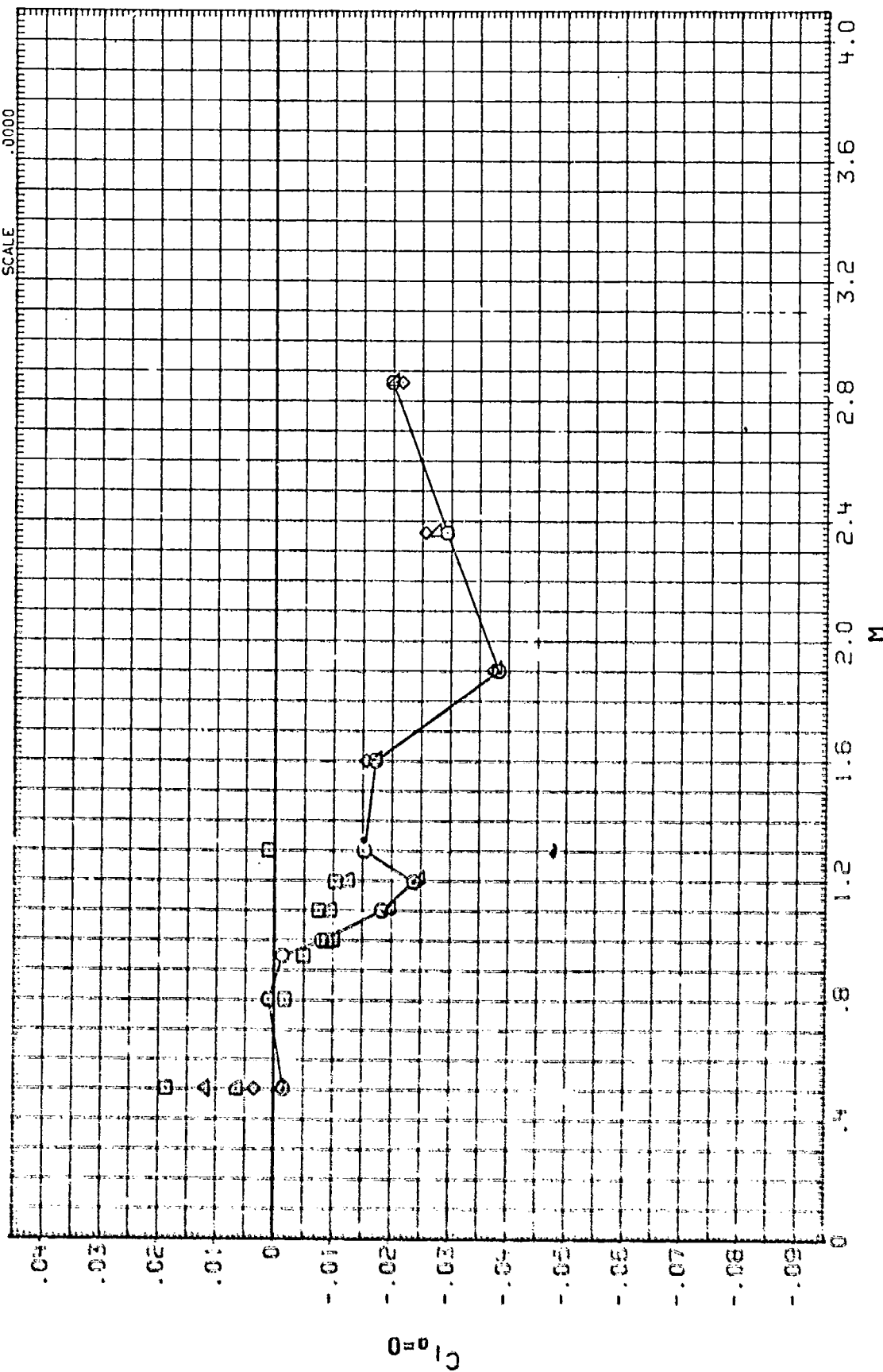
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000045	ADD	10-20-83	RAF FIN STUDY. BIF13				
000046	ADD	10-20-83	RAF FIN STUDY. BIF13				
000047	ADD	10-20-83	RAF FIN STUDY. BIF13				
000048	ADD	10-20-83	RAF FIN STUDY. BIF13				
000049	ADD	10-20-83	RAF FIN STUDY. BIF13				
000050	ADD	10-20-83	RAF FIN STUDY. BIF13				
000051	ADD	10-20-83	RAF FIN STUDY. BIF13				
000052	ADD	10-20-83	RAF FIN STUDY. BIF13				
000053	ADD	10-20-83	RAF FIN STUDY. BIF13				
000054	ADD	10-20-83	RAF FIN STUDY. BIF13				
000055	ADD	10-20-83	RAF FIN STUDY. BIF13				
000056	ADD	10-20-83	RAF FIN STUDY. BIF13				
000057	ADD	10-20-83	RAF FIN STUDY. BIF13				
000058	ADD	10-20-83	RAF FIN STUDY. BIF13				
000059	ADD	10-20-83	RAF FIN STUDY. BIF13				
000060	ADD	10-20-83	RAF FIN STUDY. BIF13				
000061	ADD	10-20-83	RAF FIN STUDY. BIF13				
000062	ADD	10-20-83	RAF FIN STUDY. BIF13				
000063	ADD	10-20-83	RAF FIN STUDY. BIF13				
000064	ADD	10-20-83	RAF FIN STUDY. BIF13				
000065	ADD	10-20-83	RAF FIN STUDY. BIF13				
000066	ADD	10-20-83	RAF FIN STUDY. BIF13				
000067	ADD	10-20-83	RAF FIN STUDY. BIF13				
000068	ADD	10-20-83	RAF FIN STUDY. BIF13				
000069	ADD	10-20-83	RAF FIN STUDY. BIF13				
000070	ADD	10-20-83	RAF FIN STUDY. BIF13				
000071	ADD	10-20-83	RAF FIN STUDY. BIF13				
000072	ADD	10-20-83	RAF FIN STUDY. BIF13				
000073	ADD	10-20-83	RAF FIN STUDY. BIF13				
000074	ADD	10-20-83	RAF FIN STUDY. BIF13				
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000077	ADD	10-20-83	RAF FIN STUDY. BIF13				
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000080	ADD	10-20-83	RAF FIN STUDY. BIF13				
000081	ADD	10-20-83	RAF FIN STUDY. BIF13				
000082	ADD	10-20-83	RAF FIN STUDY. BIF13				
000083	ADD	10-20-83	RAF FIN STUDY. BIF13				
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000086	ADD	10-20-83	RAF FIN STUDY. BIF13				
000087	ADD	10-20-83	RAF FIN STUDY. BIF13				
000088	ADD	10-20-83	RAF FIN STUDY. BIF13				
000089	ADD	10-20-83	RAF FIN STUDY. BIF13				
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000091	ADD	10-20-83	RAF FIN STUDY. BIF13				
000092	ADD	10-20-83	RAF FIN STUDY. BIF13				
000093	ADD	10-20-83	RAF FIN STUDY. BIF13				
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000095	ADD	10-20-83	RAF FIN STUDY. BIF13				
000096	ADD	10-20-83	RAF FIN STUDY. BIF13				
000097	ADD	10-20-83	RAF FIN STUDY. BIF13				



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
1418241	□	ASDC-TC-202, WAF FIN STUDY, BIF13	.000	1.750	33.900	.657	SREF 12.5660 SQ. IN.
1418245	□	ASDC-TC-202, WAF FIN STUDY, BIF13	22.500	1.750	33.900	.657	LREF 4.0000 INCHES
1418247	◇	LARC UPWT 980, AMC WRAP AROUND FIN MODEL BIF13	22.500	1.750	33.900	.665	BREF 4.0000 INCHES
1418249	△	ASDC-TC-202, WAF FIN STUDY, BIF13	45.000	1.750	33.900	.657	XMRP .0000 INCHES
1418251	△	LARC UPWT 980, AMC WRAP AROUND FIN MODEL BIF13	45.000	1.750	33.900	.665	YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
INTERM	Q	AEDC TC-222, WAF FIN STUDY, BIF13	.000	1.750	33.900	.657	SREF 12.5660 SQ. IN.
INTERM	Q	AEDC TC-222, BIF13, ROLLING MOMENT DUE TO FIN	.000	1.750	33.900	.657	LREF 4.0000 INCHES
INTERM	Q	AEDC TC-222, WAF FIN STUDY, BIF13	22.500	1.750	33.900	.657	BREF .0000 INCHES
INTERM	A	AEDC TC-222, BIF13, ROLLING MOMENT DUE TO FIN	22.500	1.750	33.900	.657	XMRP .0000 INCHES
INTERM	A	AEDC TC-222, WAF FIN STUDY, BIF13	45.000	1.750	33.800	.657	YMRP .0000 INCHES
INTERM	D	AEDC TC-222, BIF13, ROLLING MOMENT DUE TO FIN	45.000	1.750	33.900	.657	ZMRP .0000 INCHES
INTERM							SCALE .0000

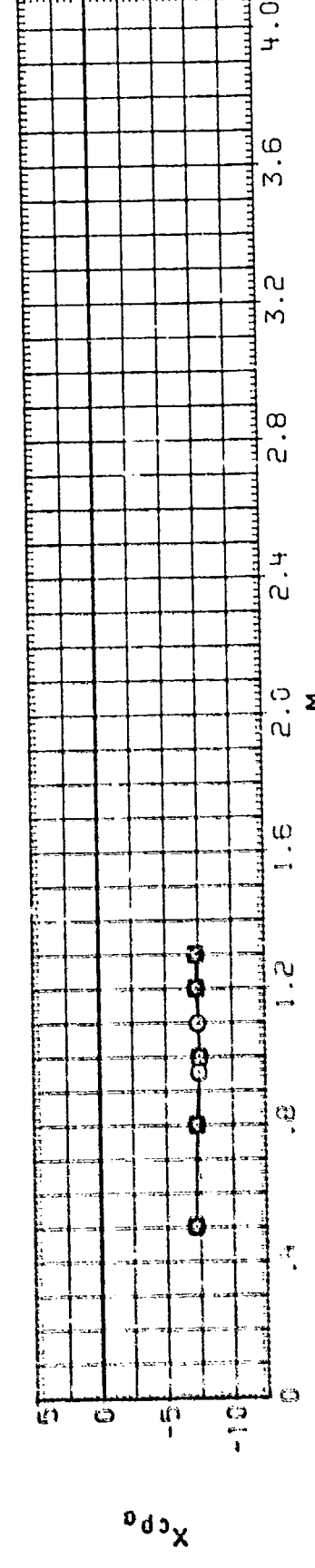
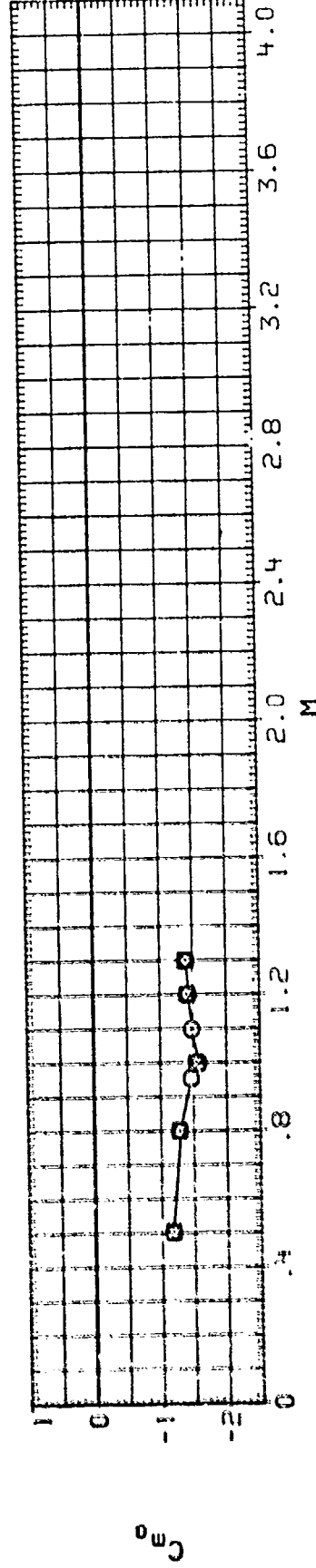
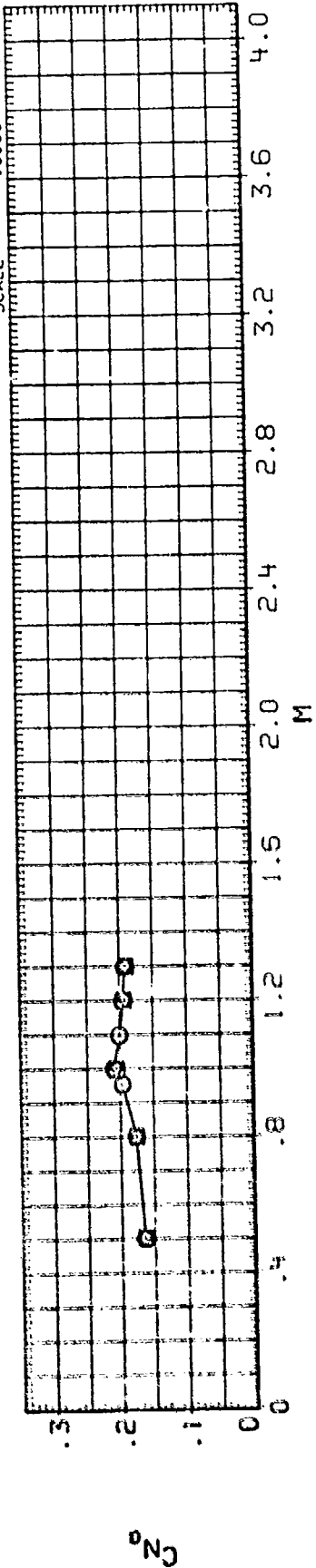


MAIN BALANCE COEFFICIENT SUMMARY, B1F13

DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 10435271 Q Q AECG 1C 275 WAPAPAROUND FIN B1F14
 10435271 Q Q AECG 1C 275 WAPAPAROUND FIN B1F14

PHI C/D LAMBDA B/2D
 .000 1.750 46.900 .657
 45.000 1.750 46.900 .657

REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 LREF 4.0000 INCHES
 BREF 4.0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000 NO-E



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 101000000 000000000 000000000 000000000
 101000000 000000000 000000000 000000000

PHI C/D LAMBDA B/2D REFERENCE INFORMATION
 .000 1.750 46.900 .657 SREF 12.5660 50. IN.
 .000 1.750 46.900 .657 LREF 4.0000 INCHES
 45.000 1.750 46.900 .657 BREF 4.0000 INCHES
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 .0000 .0000 .0000 .0000 YMRP INCHES
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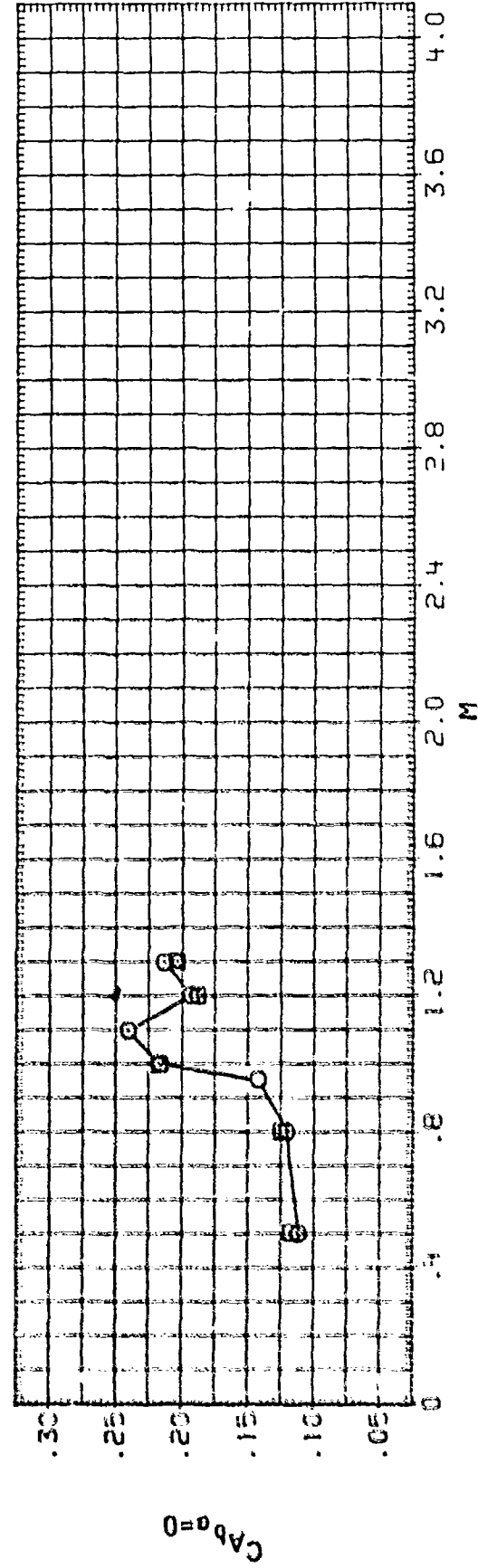
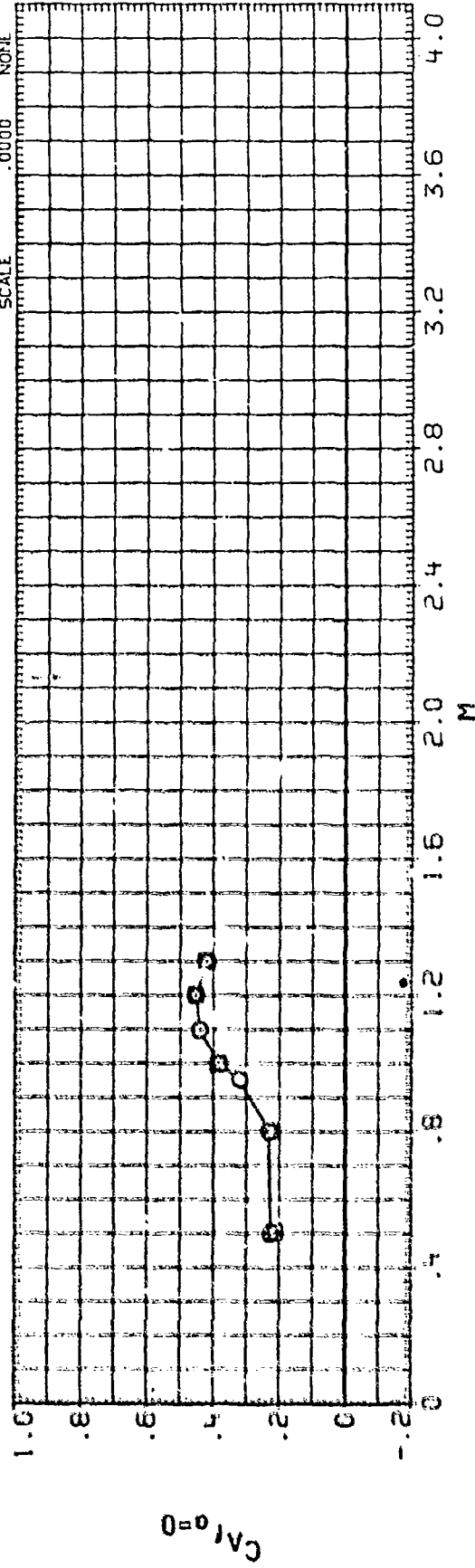
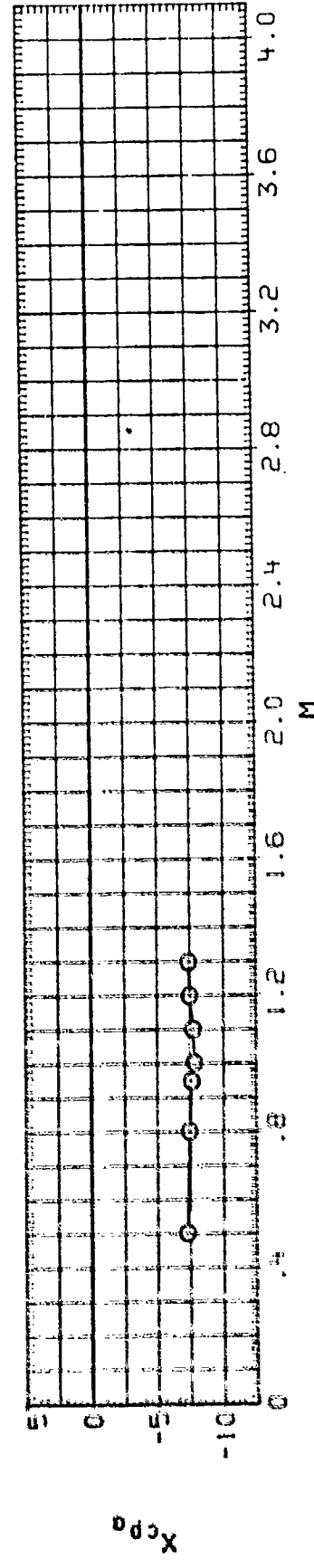
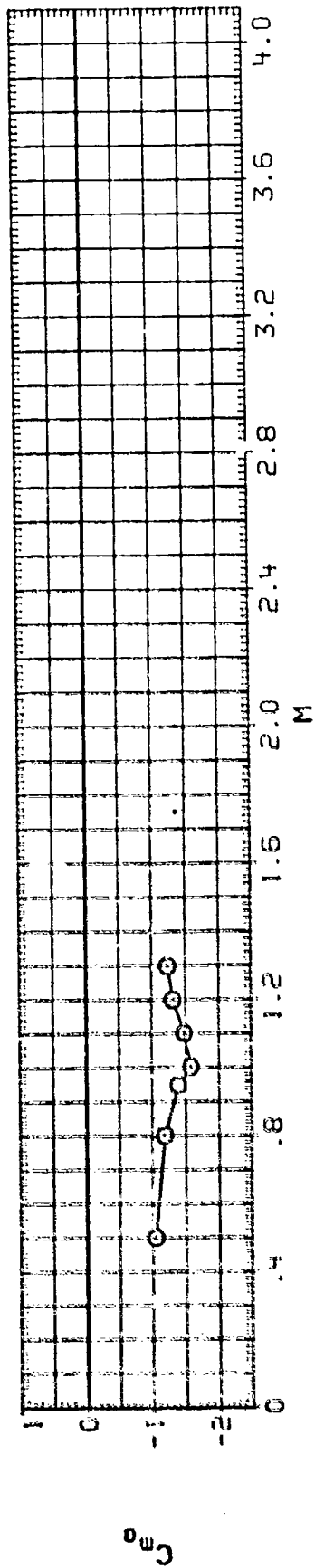
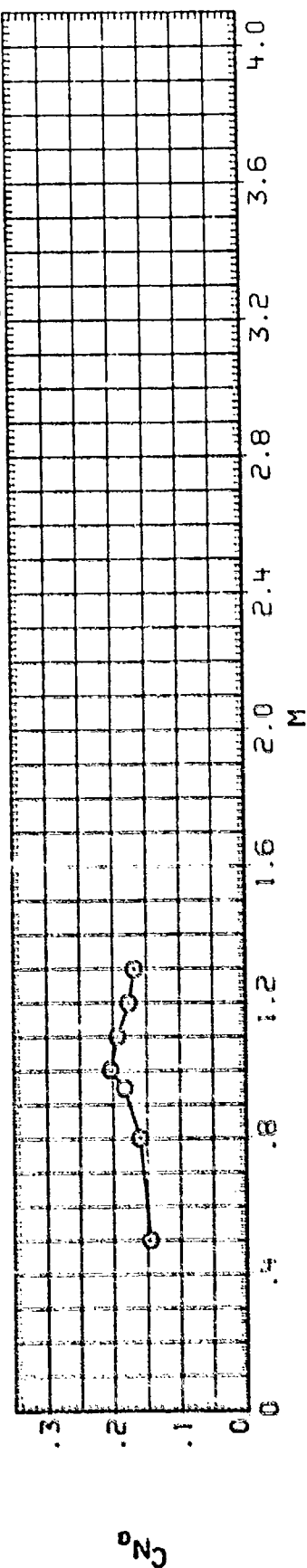


Figure 1 is a line graph showing the variation of the ratio of the rate of polymerization to the rate of monomer disappearance, C_{10}^{10} , versus the degree of polymerization, M . The y-axis ranges from 0 to 0.04, and the x-axis ranges from 0 to 4.0. Multiple data series are plotted, showing a general trend of increasing C_{10}^{10} with increasing M , with some series showing a peak around $M=1.2$.

DATA SET 5-562 CONFIGURATION DESCRIPTION
 (C1282:1) O AEG-C-202. WAF F IN STUDY. BIF15

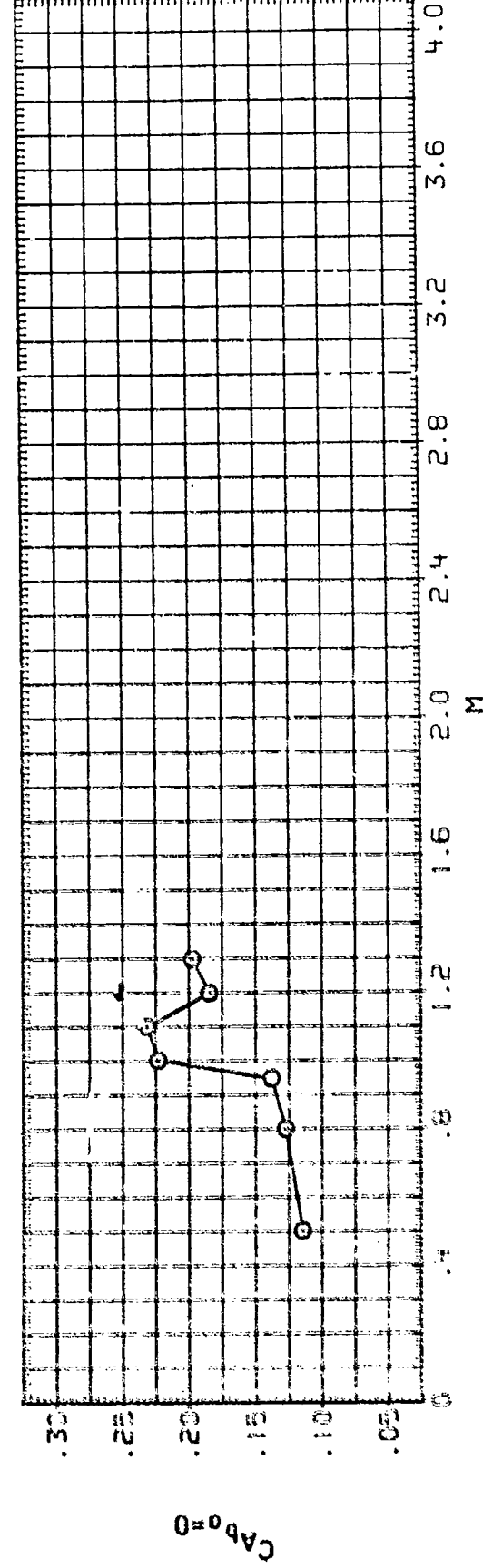
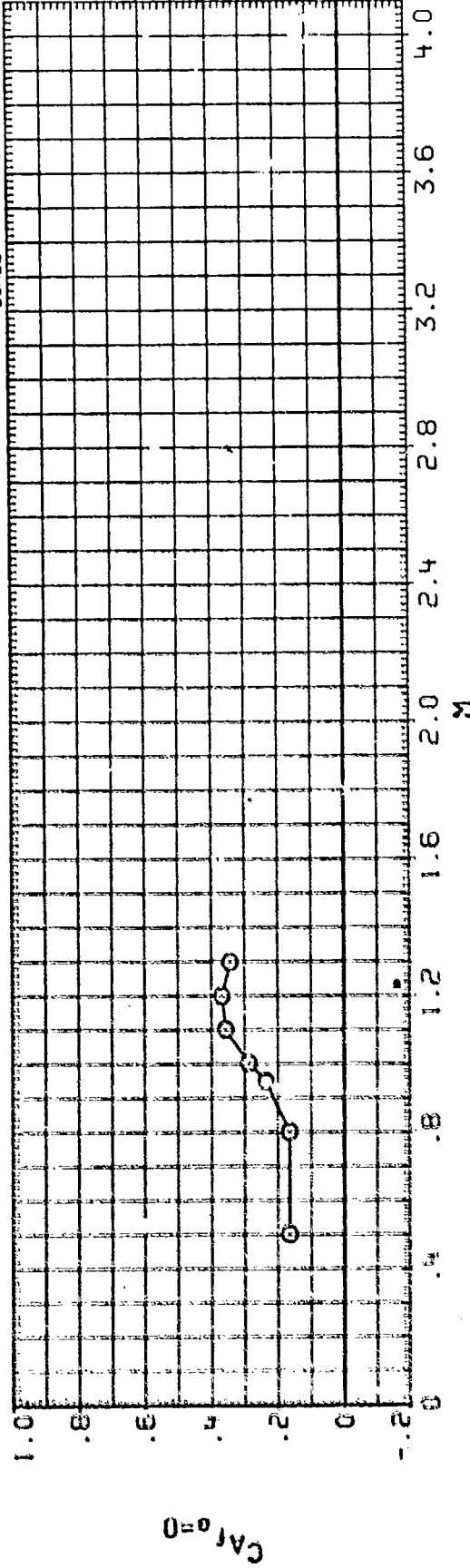
PHI .000 C/D 1.000 LAMBDA .000 B/2D .663
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 BREF 4.0000 INCHES
 XHRP .0000 INCHES
 YHRP .0000 INCHES
 ZHRP .0000 INCHES
 SCALE .0000 NONE



DATA SET: SYMBOL CONFIGURATION DESCRIPTION
 10100111 0 AEDC-10-202. HAF FIN STUDY. BIF15

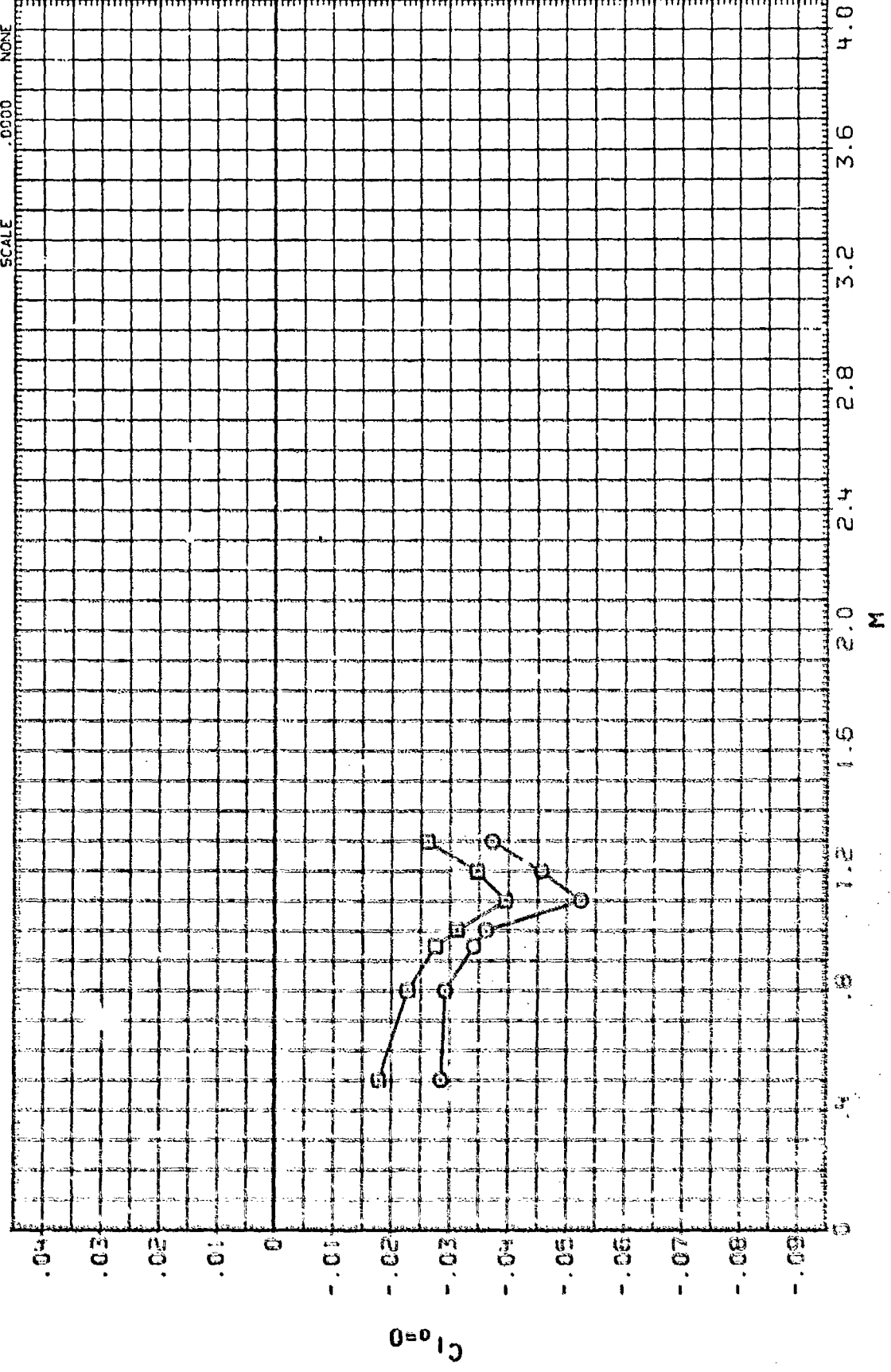
REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 LREF 4.0000 INCHES
 BREF 4.0000 INCHES
 XMRP .0000 INCHES
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 ZMRP .0000 INCHES
 SCALE .0000 NONE

PHI .000 C/D 1.000 LAMBDA .000 B/2D .663

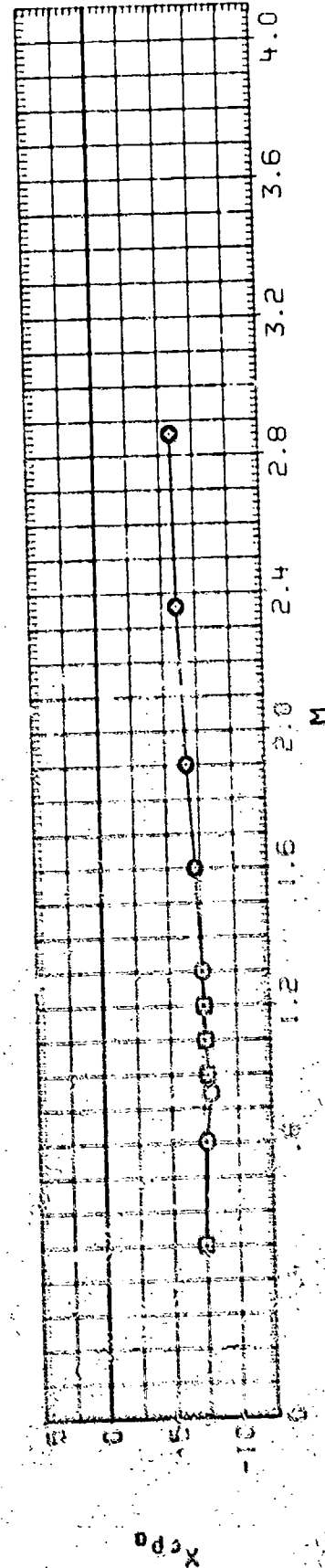


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 10-20-111 0 A500-10-202. BIF15. ROLLING MOMENT DUE TO FIN

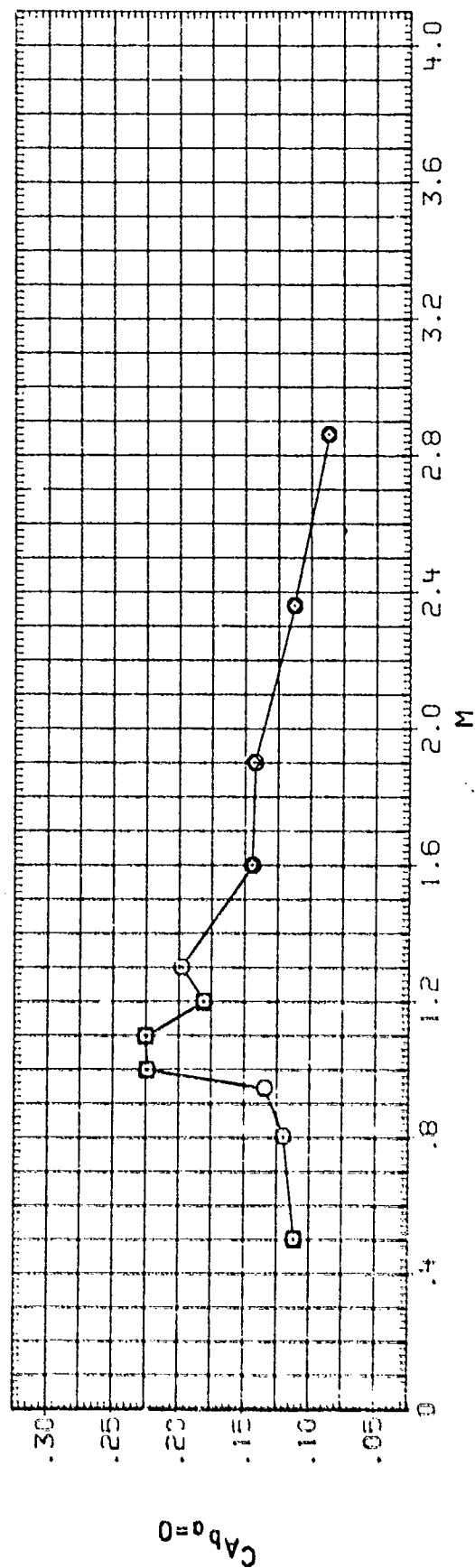
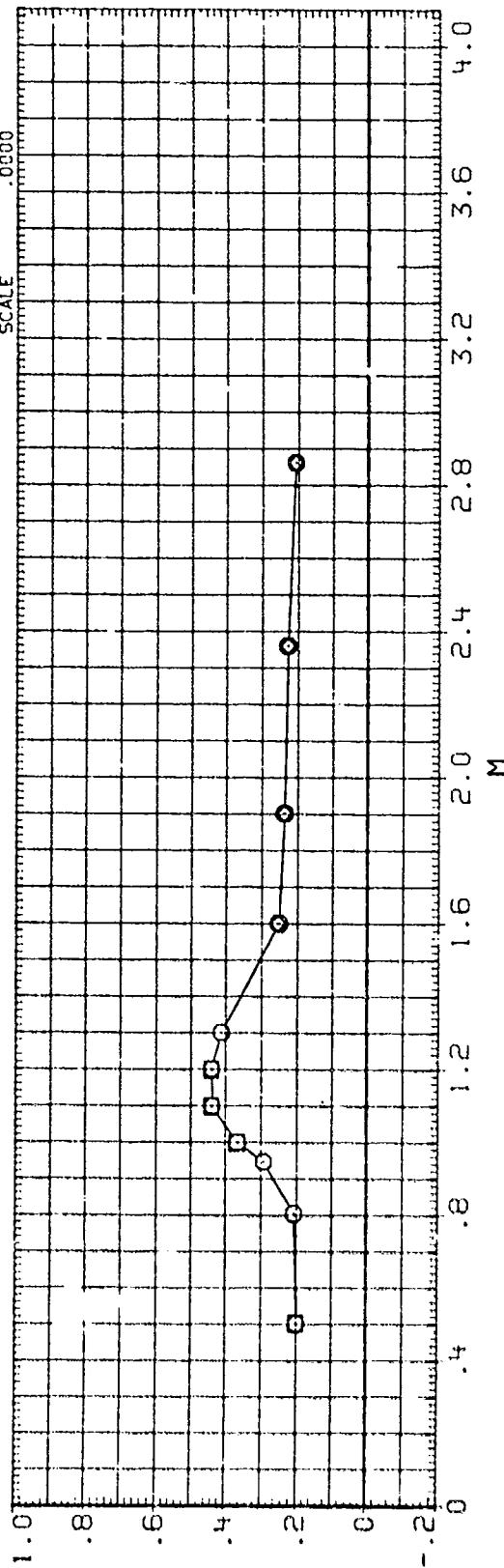
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 .000 1.000 .000 .663 LREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000 NONE



MAIN BALANCE COEFFICIENT SUMMARY. BIF15



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(JTB812)	○	AEDC-TC-202. WAF FIN STUDY. BIF16	.000	1.000	20.600	.648	SREF 2.5860 50. IN.
(JTB813)	□	AEDC-TC-202. WAF FIN STUDY. BIF16	45.000	1.000	20.600	.648	LREF 4.0000 INCHES
(FLXB20)	◇	LARC UPAT 980 AMC WRAP AROUND FIN MODEL BIF16	45.000	1.000	20.600	.648	BREF 4.0000 INCHES
							XMRP .0000 INCHES
							YMRP .0000 INCHES
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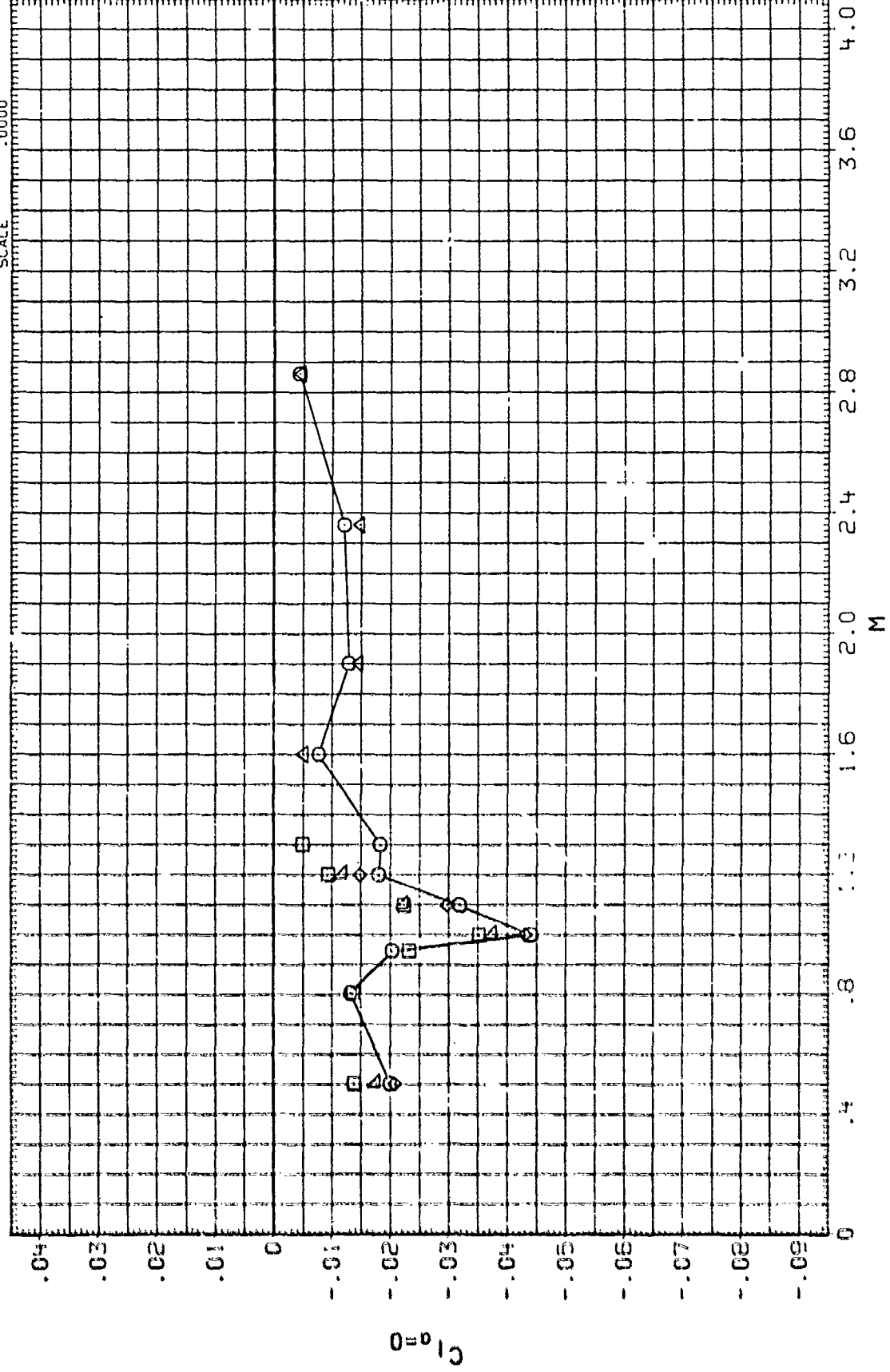


MAIN BALANCE COEFFICIENT SUMMARY, BIF16

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(JF5B12) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B12) O AEDC-TC-202. B1F16. ROLLING MOMENT DUE TO FIN
 (H5B13) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B22) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B23) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B24) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B25) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B26) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B27) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B28) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B29) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B30) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B31) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B32) O AEDC-TC-202. WAF FIN STUDY. B1F16
 (H5B33) O AEDC-TC-202. WAF FIN STUDY. B1F16
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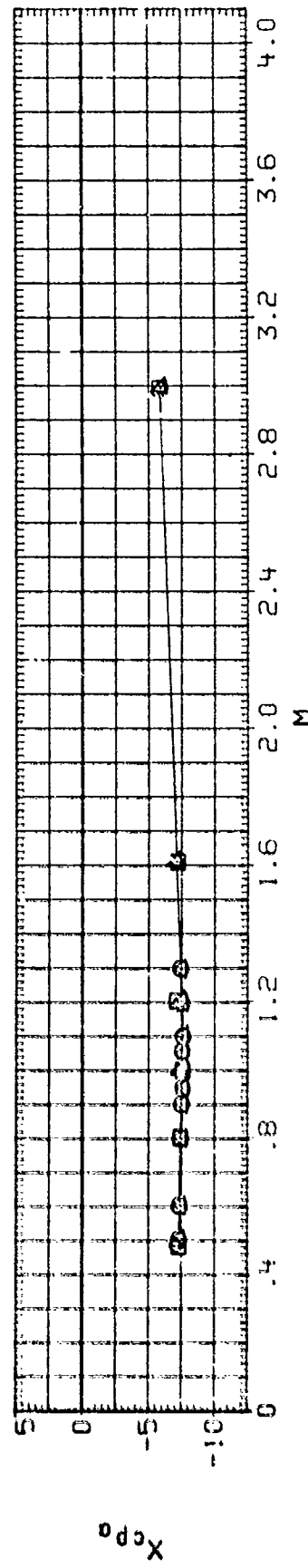
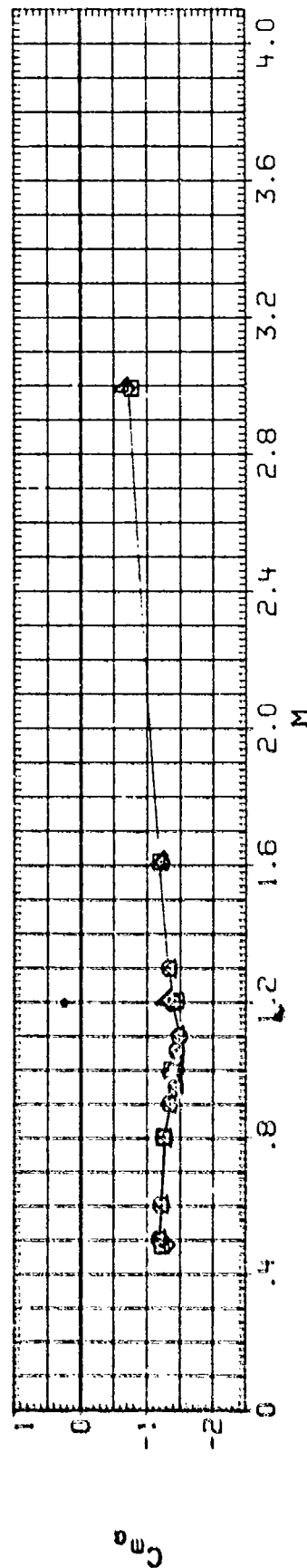
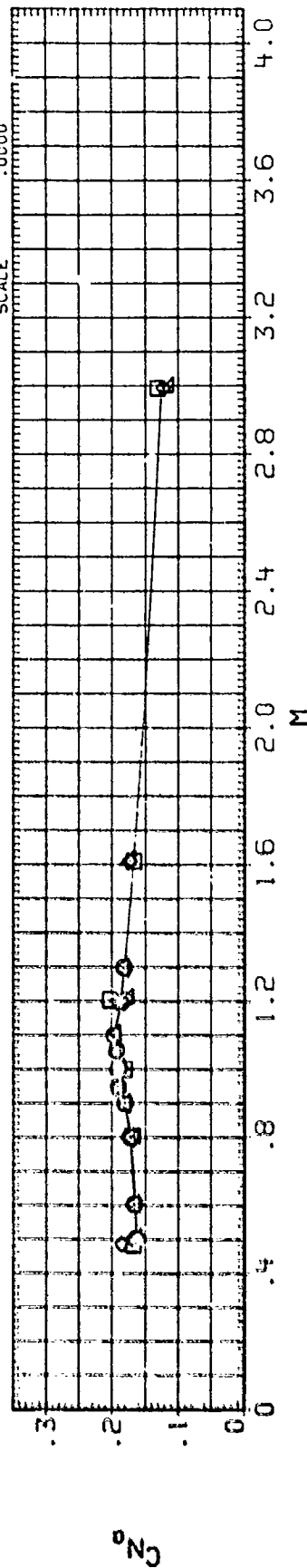
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 BREF 4.0000
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 YMRP .0000
 ZMRP .0000
 SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B1F16

DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 01X1522 P04C S-255 WARPBOUND FIN B1F17
 01X1523 P04C S-255 WARPBOUND FIN B1F17
 01X1524 AEDC 1C 273 WARPBOUND FIN B1F17
 01X1525 P04C S-255 WARPBOUND FIN B1F17

PHI C/D LAMBDA B/2D REFERENCE INFORMATION
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 .000 1.750 60.000 .657 LREF 4.0000 INCHES
 22.500 1.750 60.000 .657 BREF 4.0000 INCHES
 45.000 1.750 60.000 .657 XMRP .0000 INCHES
 45.000 1.750 60.000 .657 YMRP .0000 INCHES
 .0000 SCALE .0000



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (O) AEC TC 273 WAPAROUND FIN B1F17
 (O) MCIC S-255 WAPAROUND FIN B1F17
 (O) MCIC S-255 WAPAROUND FIN B1F17
 (O) AEC TC 273 WAPAROUND FIN B1F17
 (O) MCIC S-255 WAPAROUND FIN B1F17

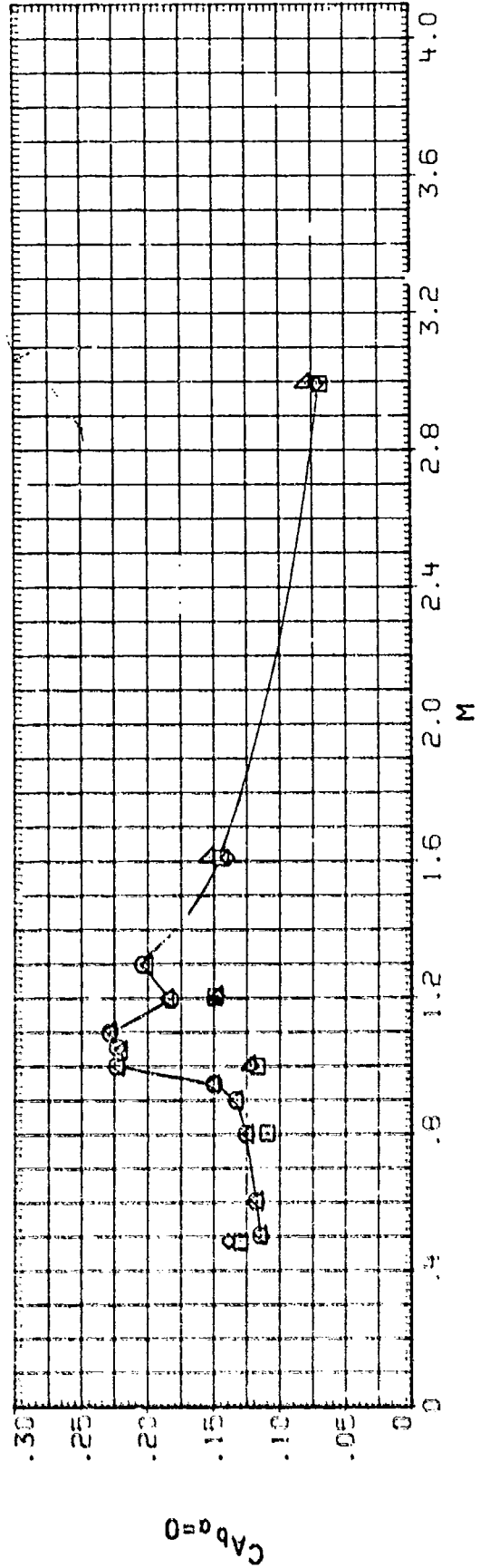
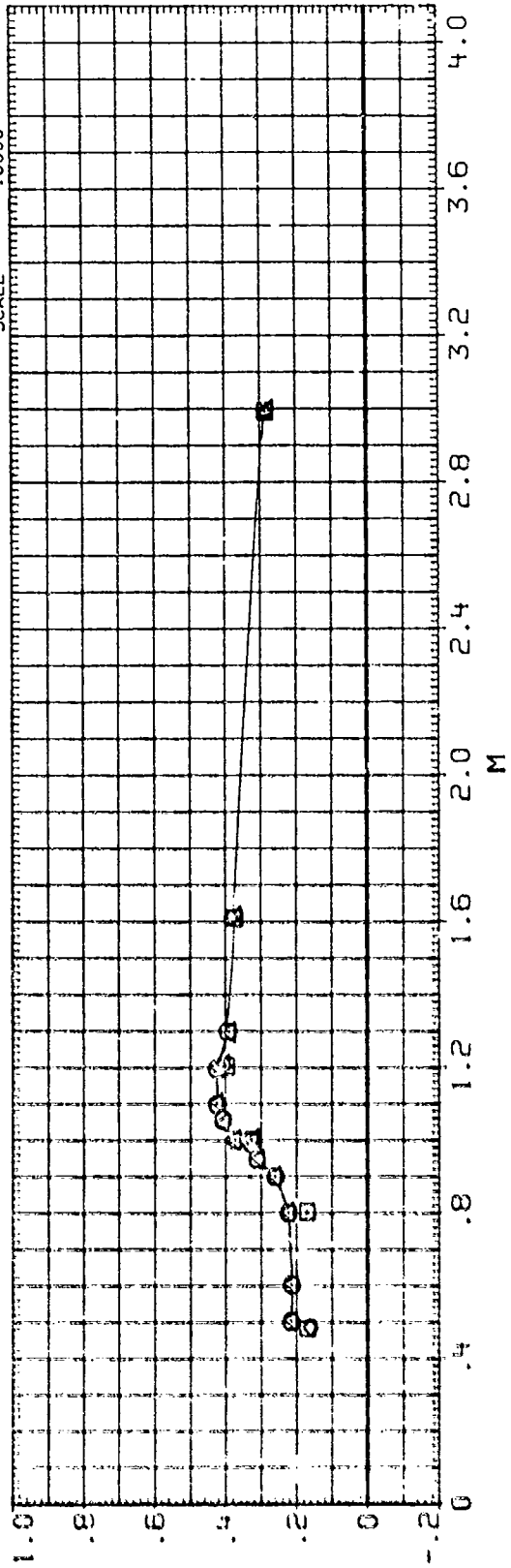
PHI .000
 .000
 22.500
 45.000
 45.000

L/D 1.750
 1.750
 1.750
 1.750
 1.750

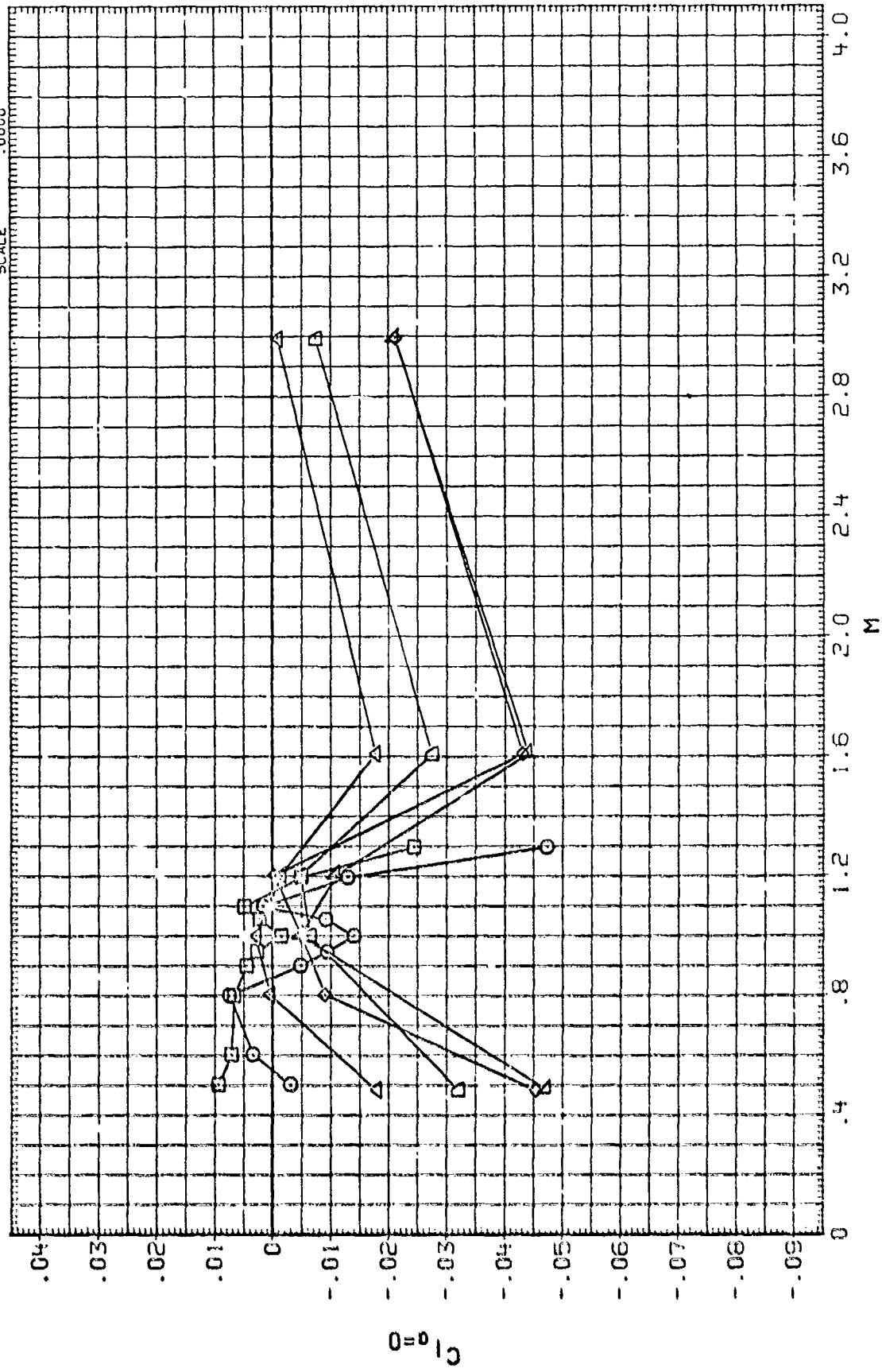
LAMBDA 60.000
 60.000
 60.000
 60.000
 60.000

B/20 .657
 .657
 .657
 .657
 .657

REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 LREF 4.0000 INCHES
 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000

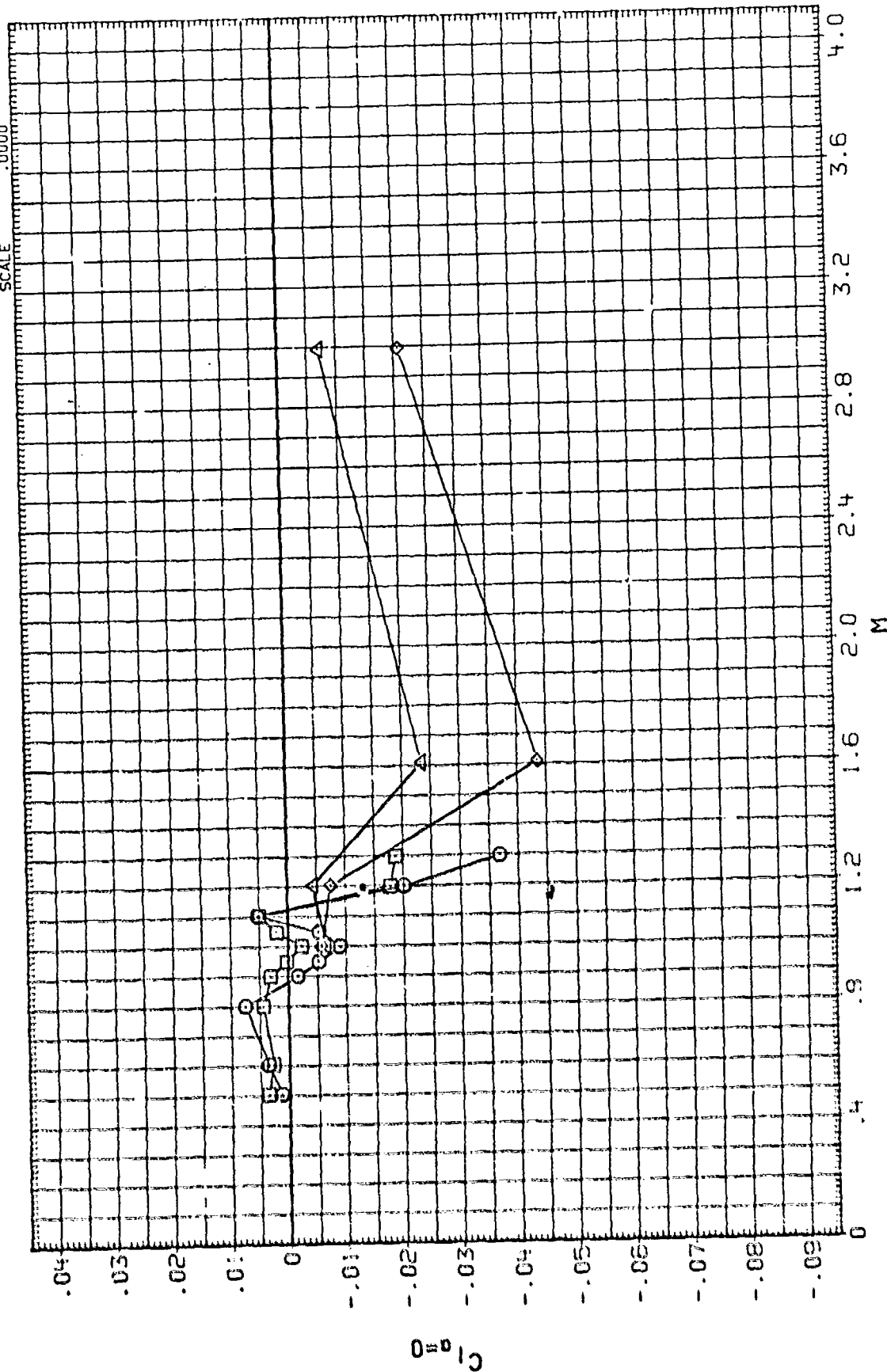


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(DXB23)	○	AEDC TC 273 WAPAROUND FIN B1F17	.000	1.750	60.000	.657	SREF 12.5660 SQ. IN.
(FXIC08)	□	AEDC TC 273, B1F17, ROLLING MOMENT DUE TO FIN	.000	1.750	60.000	.657	LREF 4.0000 INCHES
(DXB22)	◇	MOAC S-255 WAPAROUND FIN B1F17	.000	1.750	60.000	.657	BREF 4.0000 INCHES
(DXC22)	△	MOAC S-255, B1F17, ROLLING MOMENT DUE TO FIN	.000	1.750	60.000	.657	XMRP .0000 INCHES
(DXB23)	△	MOAC S-255 WAPAROUND FIN B1F17	22.500	1.750	60.000	.657	YMRP .0000 INCHES
(DXC23)	△	MOAC S-255, B1F17, ROLLING MOMENT DUE TO FIN	22.500	1.750	60.000	.657	ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B1F17

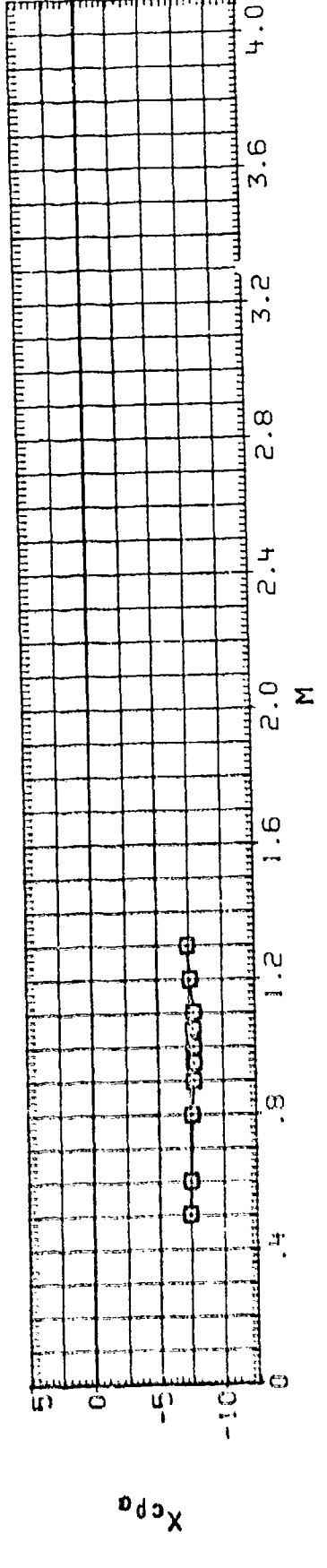
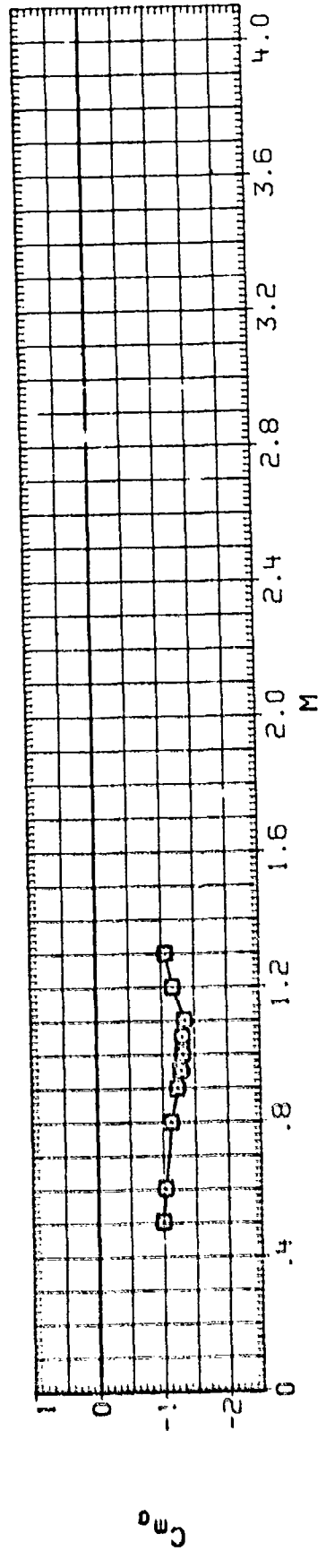
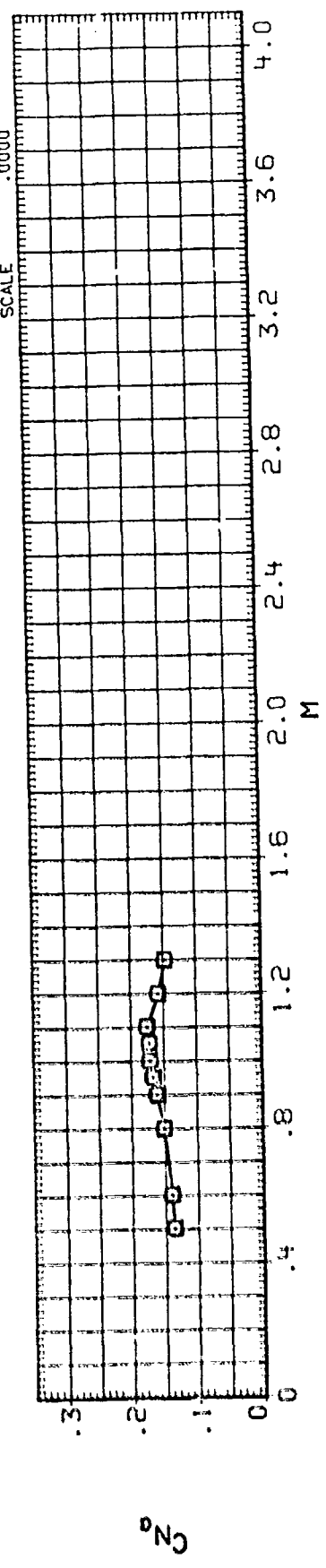
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/20	REFERENCE INFORMATION
(DX303)	○	AEDC TC 273. WAPAROUND FIN BIF17	45.000	1.750	60.000	.657	SREF 12.5660 SQ. IN.
(FX303)	□	AEDC TC 273. BIF17. ROLLING MOMENT DUE TO FIN	45.000	1.750	60.000	.657	LREF 4.0000 INCHES
(DX324)	◇	WAC S-255. WAPAROUND FIN BIF17	45.000	1.750	60.000	.657	BREF 4.0000 INCHES
(DX324)	△	WAC S-255. BIF17. ROLLING MOMENT DUE TO FIN	45.000	1.750	60.000	.657	YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY. BIF17

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 INDEX:1: O AEDC IC 273 WRAPAROUND FIN BIF18
 INDEX:1: □ AEDC IC 273 WRAPAROUND FIN BIF18

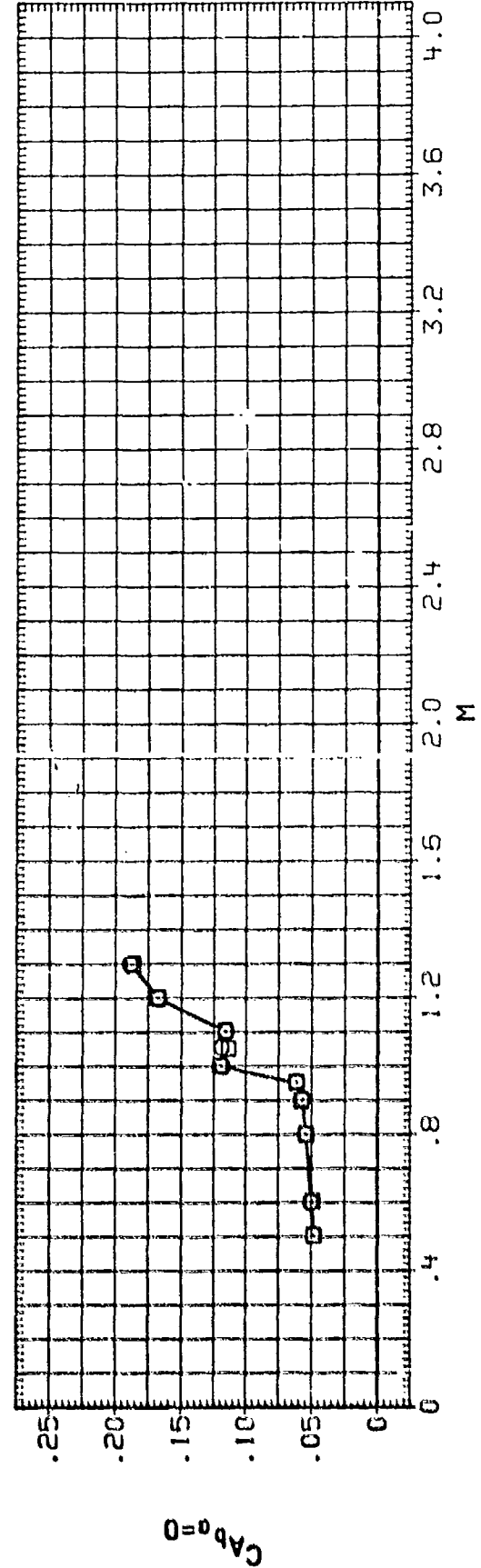
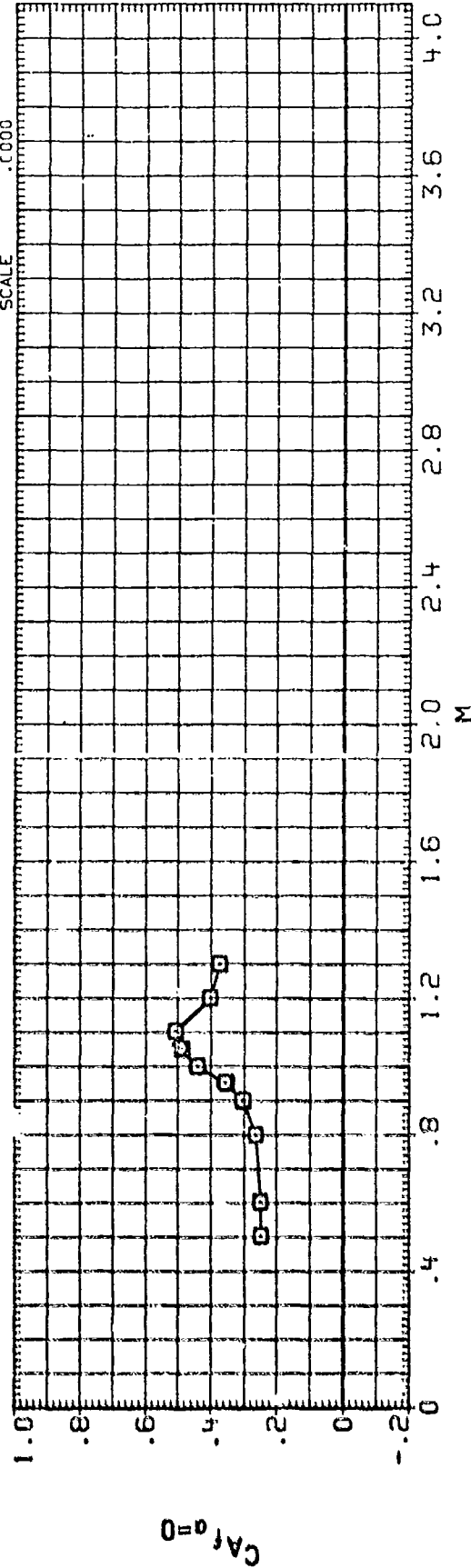
PHI C/D LAMBDA B/20 REFERENCE INFORMATION SQ. IN.
 .000 1.000 46.900 .553 SREF 12.5660 INCHES
 45.000 1.000 46.900 .553 LREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



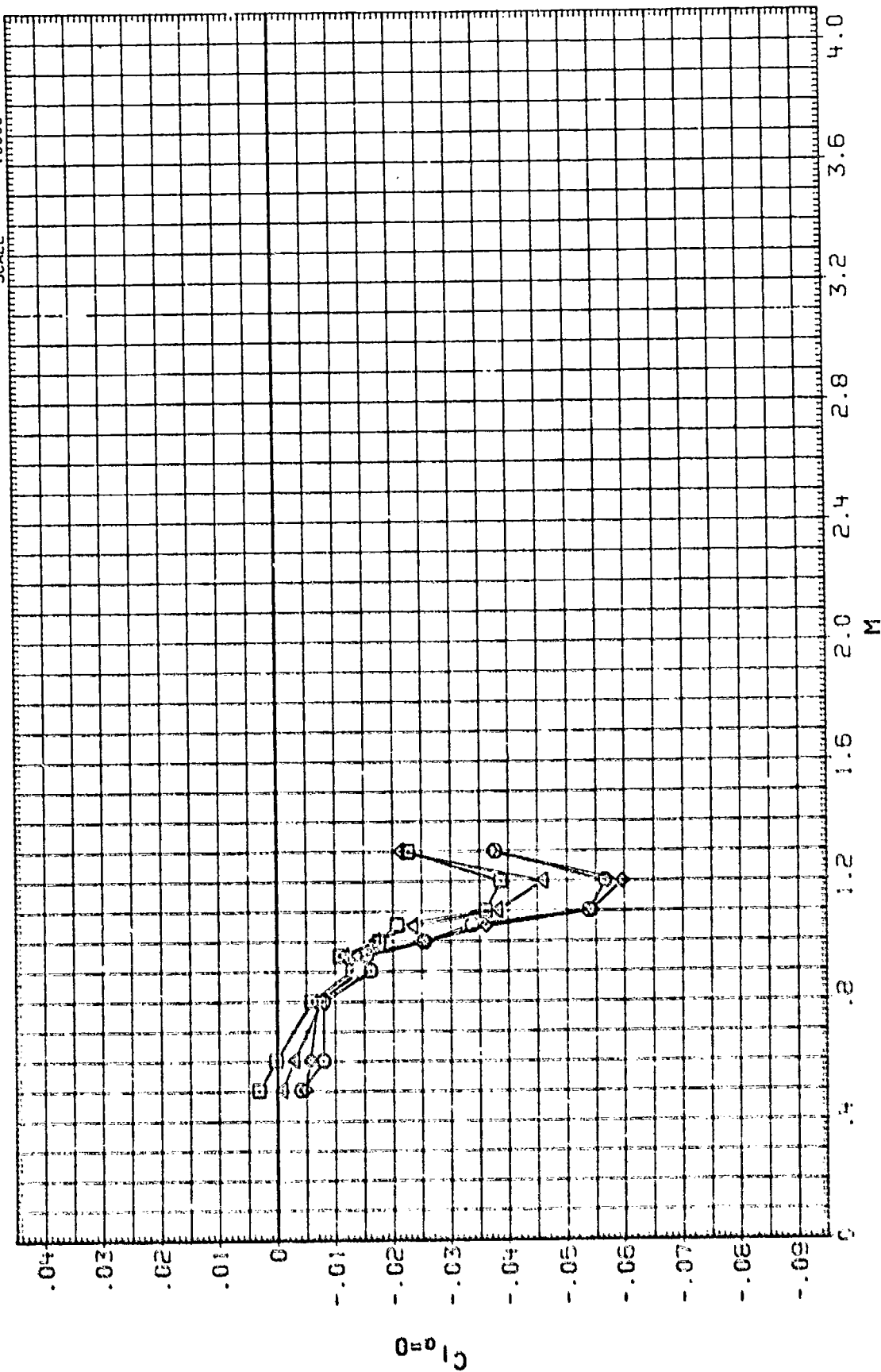
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (DX2310) O AEDC TC 273 KRAPAROUND FIN BIF18
 (DX3911) □ AEDC TC 273 KRAPAROUND FIN BIF18

PHI C/D LAMBDA B/2D
 .000 1.000 46.900 .653
 45.000 1.000 46.900 .653

REFERENCE INFORMATION
 SP² 12.5660 SQ. IN.
 LRLF 4.0000 INCHES
 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



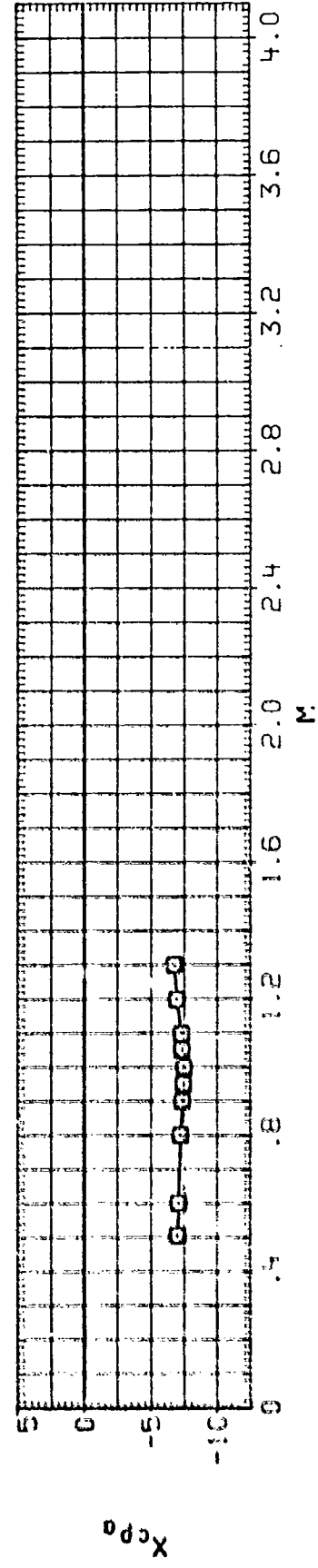
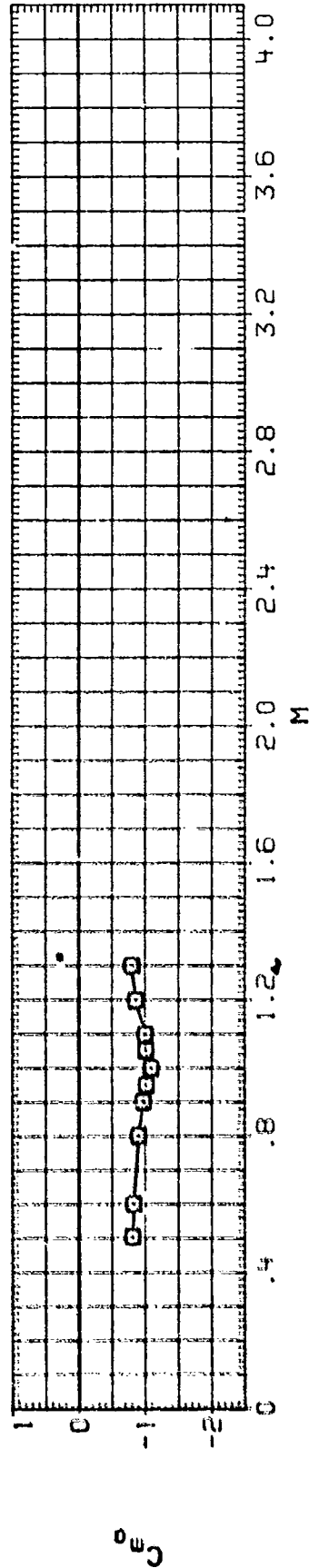
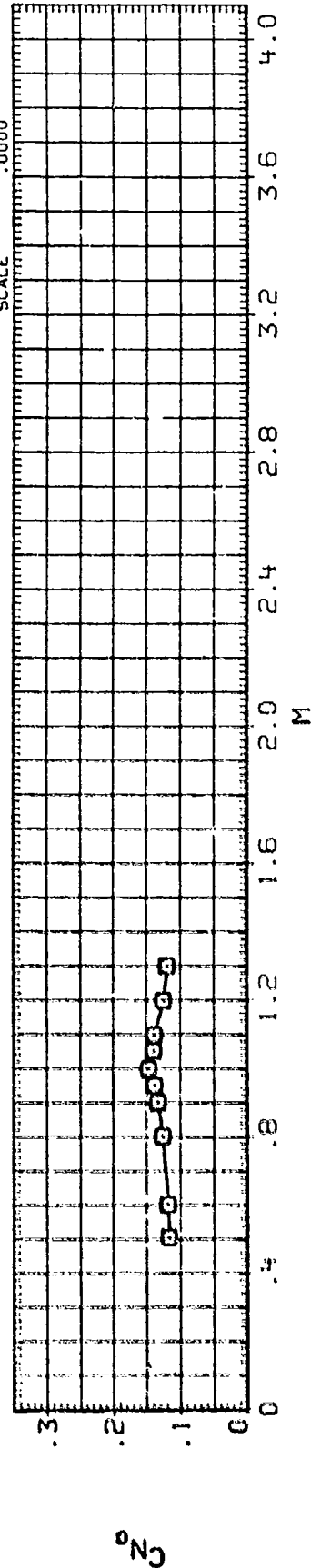
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(EX2B12)	□	ADD TO 273 WRAPAROUND FIN B1F18	.000	1.000	46.900	.653	SREF 12.5660 SQ. IN.
(EX3C13)	◇	ADD TO 273. B1F18. ROLLING MOMENT DUE TO FIN	.000	1.000	46.900	.653	LREF 4.0000 INCHES
(EX2B11)	◇	ADD TO 273. WRAPAROUND FIN B1F18	45.000	1.000	46.900	.653	BREF 4.0000 INCHES
(EX3C11)	△	ADD TO 273. B1F18. ROLLING MOMENT DUE TO FIN	45.000	1.000	46.900	.653	XMRP .0000 INCHES
							YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



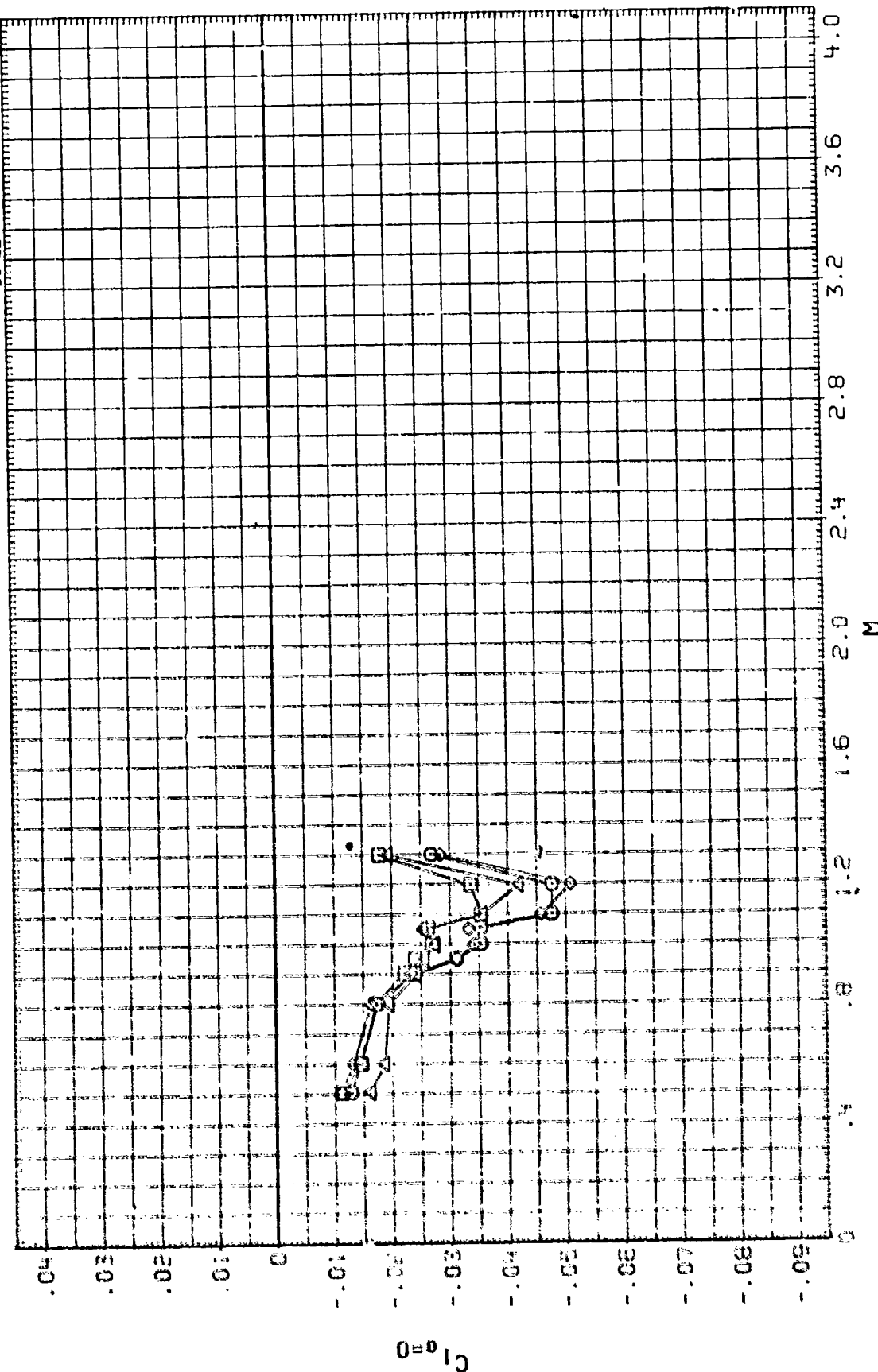
DATA SET SYSTEM CONFIGURATION DESCRIPTION
 10X13121 Q AEDC TC 273 WRAPAROUND FIN B1F19
 10X2313 Q AEDC TC 273 WRAPAROUND FIN B1F19

PHI C/D LAMBDA B/2D
 .000 1.000 57.300 .638
 45.000 1.000 57.300 .638

REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 LREF 4.0000 INCHES
 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
FIXED:21	○	AEDC TC 273. PREPARED FIN B1F19	.000	1.000	57.300	.638	SREF 12.5660 SQ. IN.
FIXED:21	○	AEDC TC 273. B1F19. ROLLING MOMENT DUE TO FIN	.000	1.000	57.300	.638	LREF 4.0000 INCHES
FIXED:21	○	AEDC TC 273. PREPARED FIN B1F19	45.000	1.000	57.300	.638	BREF 4.0000 INCHES
FIXED:21	○	AEDC TC 273. B1F19. ROLLING MOMENT DUE TO FIN	45.000	1.000	57.300	.638	XMRP .0000 INCHES
FIXED:21	△	AEDC TC 273. B1F19. ROLLING MOMENT DUE TO FIN	45.000	1.000	57.300	.638	YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000

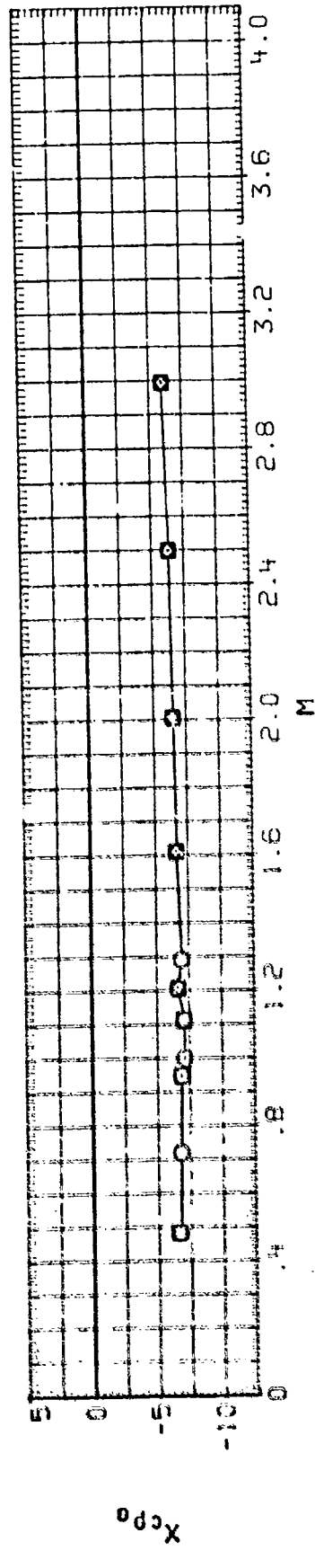
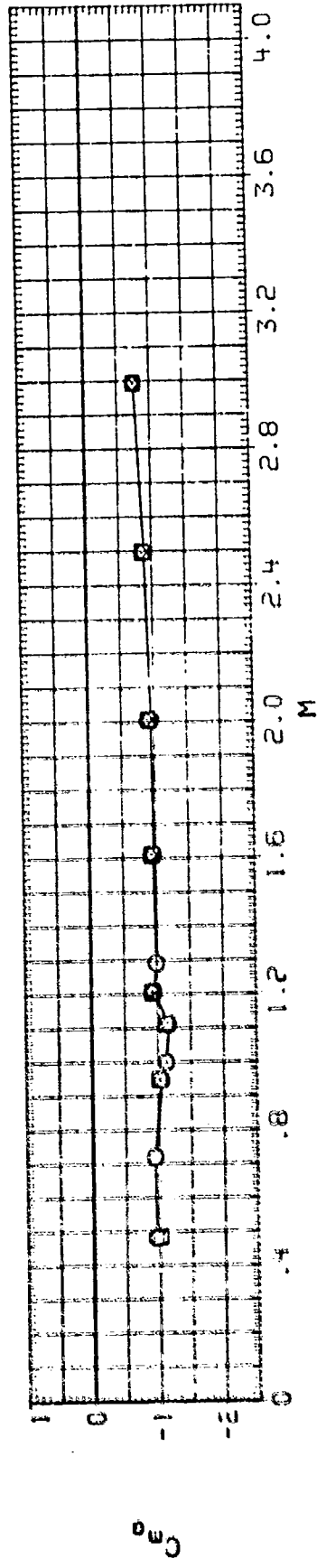
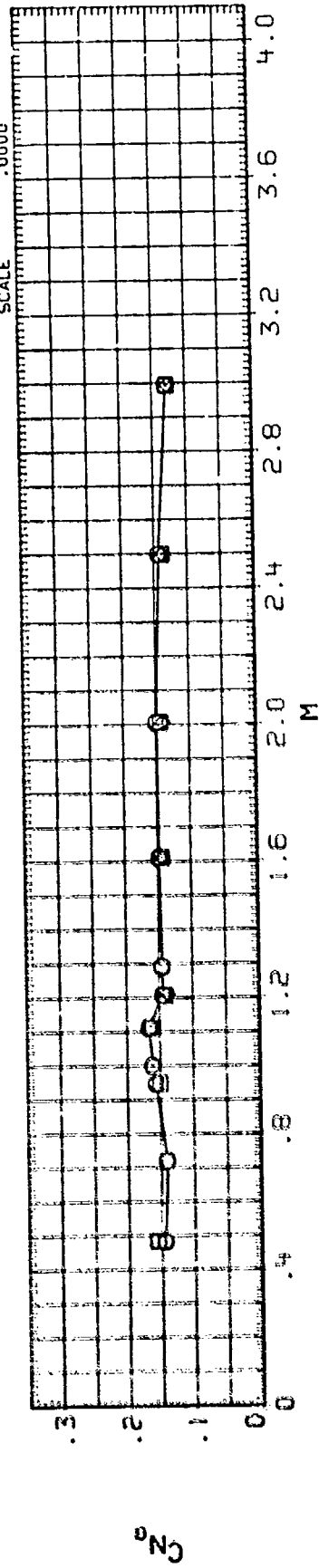


MAIN BALANCE COEFFICIENT SUMMARY. B1F19

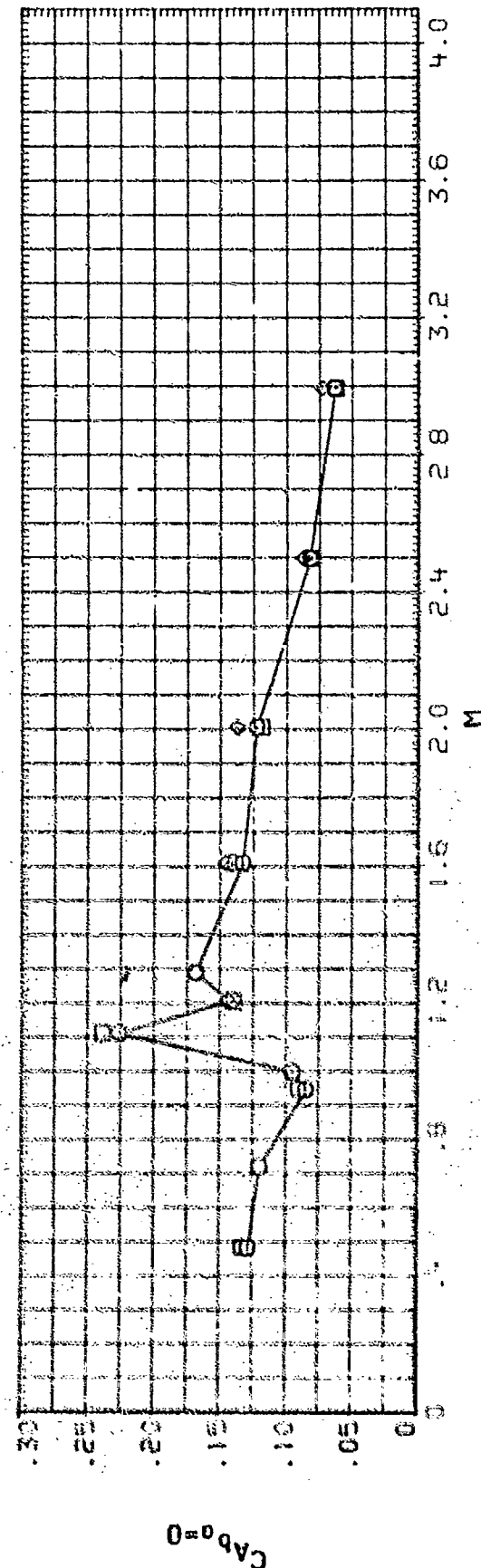
A 4x3 grid of 12 small icons representing various professions and roles. The icons are arranged in four rows and three columns. The first row shows a person in a hard hat, a person in a lab coat, and a person in a suit. The second row shows a person in a hard hat, a person in a lab coat, and a person in a suit. The third row shows a person in a hard hat, a person in a lab coat, and a person in a suit. The fourth row shows a person in a hard hat, a person in a lab coat, and a person in a suit.

PK1	C/D	LAMBDA	B/2D
.000	1.750	.000	.535
22.500	1.750	.000	.535
45.000	1.750	.000	.535

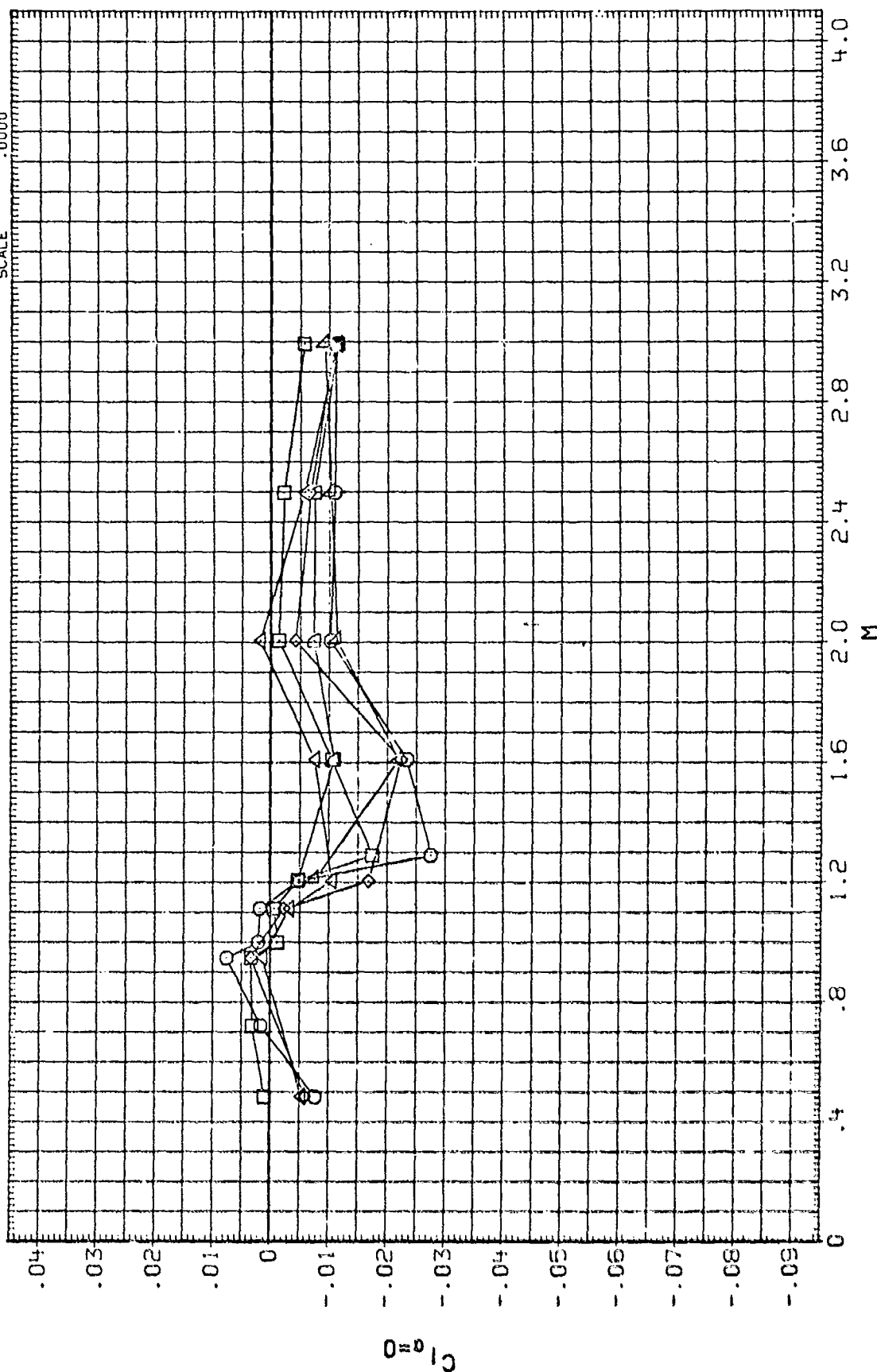
REFERENCE INFORMATION	
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LREF	4.0000 IN.
BREF	4.0000 IN.
XMRP	.0000 IN.
YMRP	.0000 IN.
ZMRP	.0000 IN.
SCALE	.0000



M	$\log_{10}(Ca_{1000})$
0.4	0.25
0.8	0.35
1.0	0.40
1.2	0.45
1.4	0.50
1.6	0.60
2.0	0.75
2.4	0.85
2.8	0.90



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/20	REFERENCE INFORMATION
(DX5B25)	□	MDAC S-256 WRAPAROUND FIN	.000	1.750	.000	.535	SREF 12.5660 IN. 50.
(CX5C25)	○	MDAC S-256, B1F20, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.535	LREF 4.0000 IN.
(DY5B26)	◇	MDAC S-256 WRAPAROUND FIN	22.500	1.750	.000	.535	BREF 4.0000 IN.
(CX5C26)	△	MDAC S-256, B1F20, ROLLING MOMENT DUE TO FIN	22.500	1.750	.000	.535	XMRP .0000 IN.
(DY5B27)	◊	MDAC S-256 WRAPAROUND FIN	45.000	1.750	.000	.535	YMRP .0000 IN.
(CX5C27)	◻	MDAC S-256, B1F20, ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.535	ZMRP .0000 IN.
							SCALE .0000

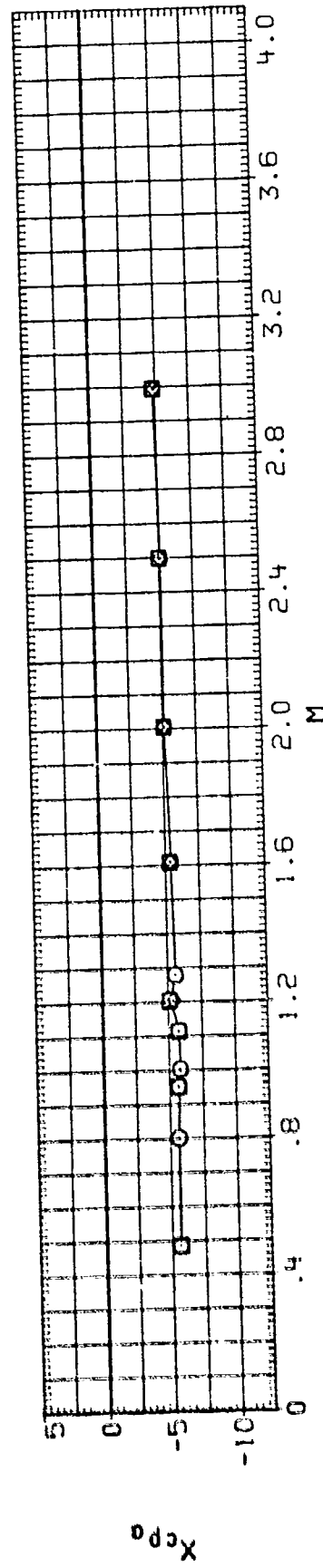
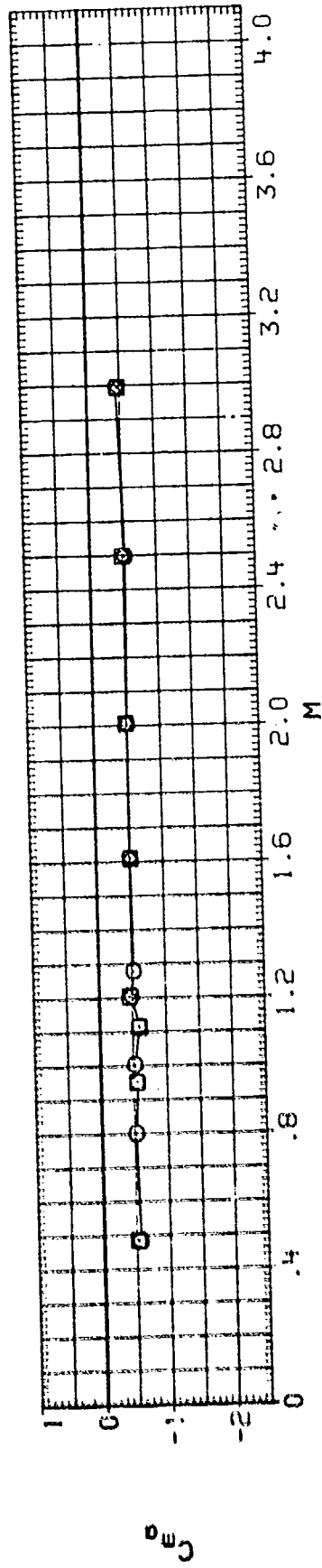
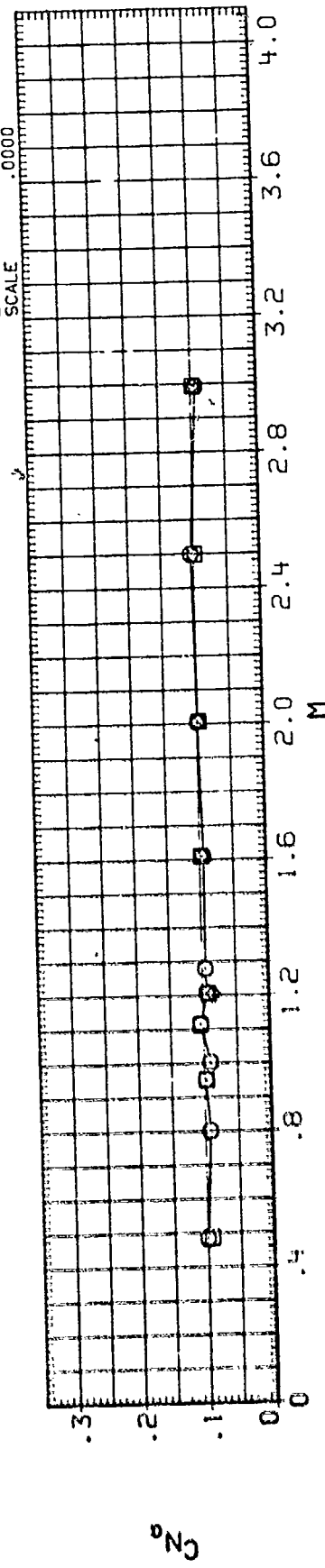


MAIN BALANCE COEFFICIENT SUMMARY, B1F20

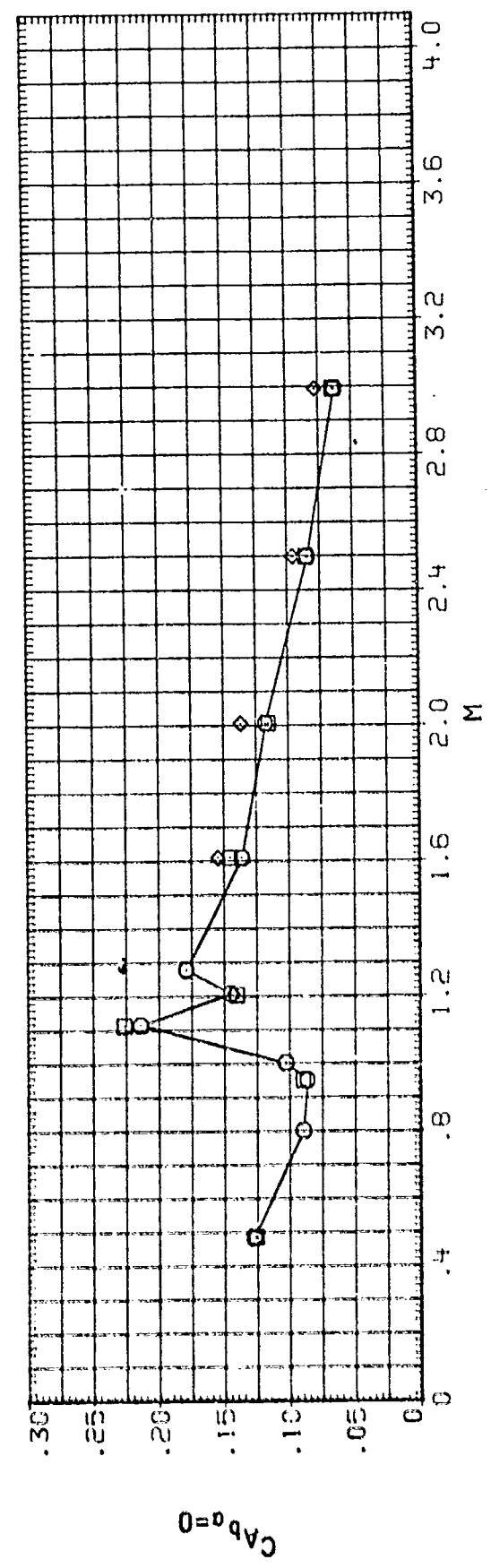
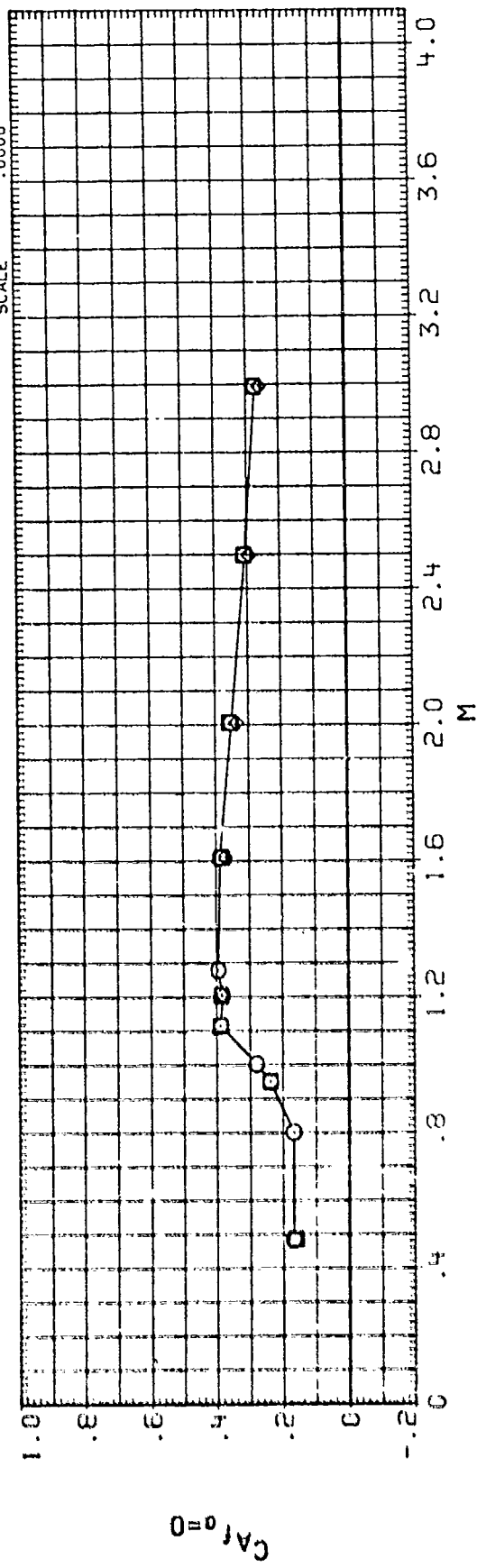
DATA SET SYMBOL CONFIGURATION DESCRIPTION B1F21
 (DX5228) MCAC S-255 WAPAROUND FIN B1F21
 (DX5229) MCAC S-255 WAPAROUND FIN B1F21
 (DX5230) MCAC S-255 WAPAROUND FIN B1F21

PHI C/D LAMBDA B/2D
 .000 1.750 .000 .348
 22.500 1.750 .000 .348
 45.000 1.750 .000 .348

REFERENCE INFORMATION
 SREF 12.5660 IN. SQ.
 LREF 4.0000 IN.
 BREF 4.0000 IN.
 XMRP .0000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0000



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
1045825	○	POAC S-255 WRAPAROUND FIN	.000	1.750	.000	.348	SREF 12.5660 IN. SQ.
1045826	□	POAC S-255 WRAPAROUND FIN	22.500	1.750	.000	.348	LREF 4.0000 IN.
1045827	◇	POAC S-255 WRAPAROUND FIN	45.000	1.750	.000	.348	BREF 4.0000 IN.
							XMRP .0000 IN.
							YMRP .0000 IN.
							ZMRP .0000 IN.
							SCALE .0000



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(DXS22) O MDAC S-255 WRAPAROUND FIN B1F21

(CXSC22) □ MDAC S-255 B1F21. ROLLING MOMENT DUE TO FIN B1F21

(DXS22) ◇ MDAC S-255 WRAPAROUND FIN B1F21

(CXSC22) △ MDAC S-255 B1F21. ROLLING MOMENT DUE TO FIN B1F21

(DXS22) ▽ MDAC S-255 WRAPAROUND FIN B1F21

(CXSC22) ▽ MDAC S-255 B1F21. ROLLING MOMENT DUE TO FIN B1F21

PHI C/D LAMBDA B/2D REFERENCE INFORMATION

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.000 1.750 .000 .348 LREF 4.0000 IN.

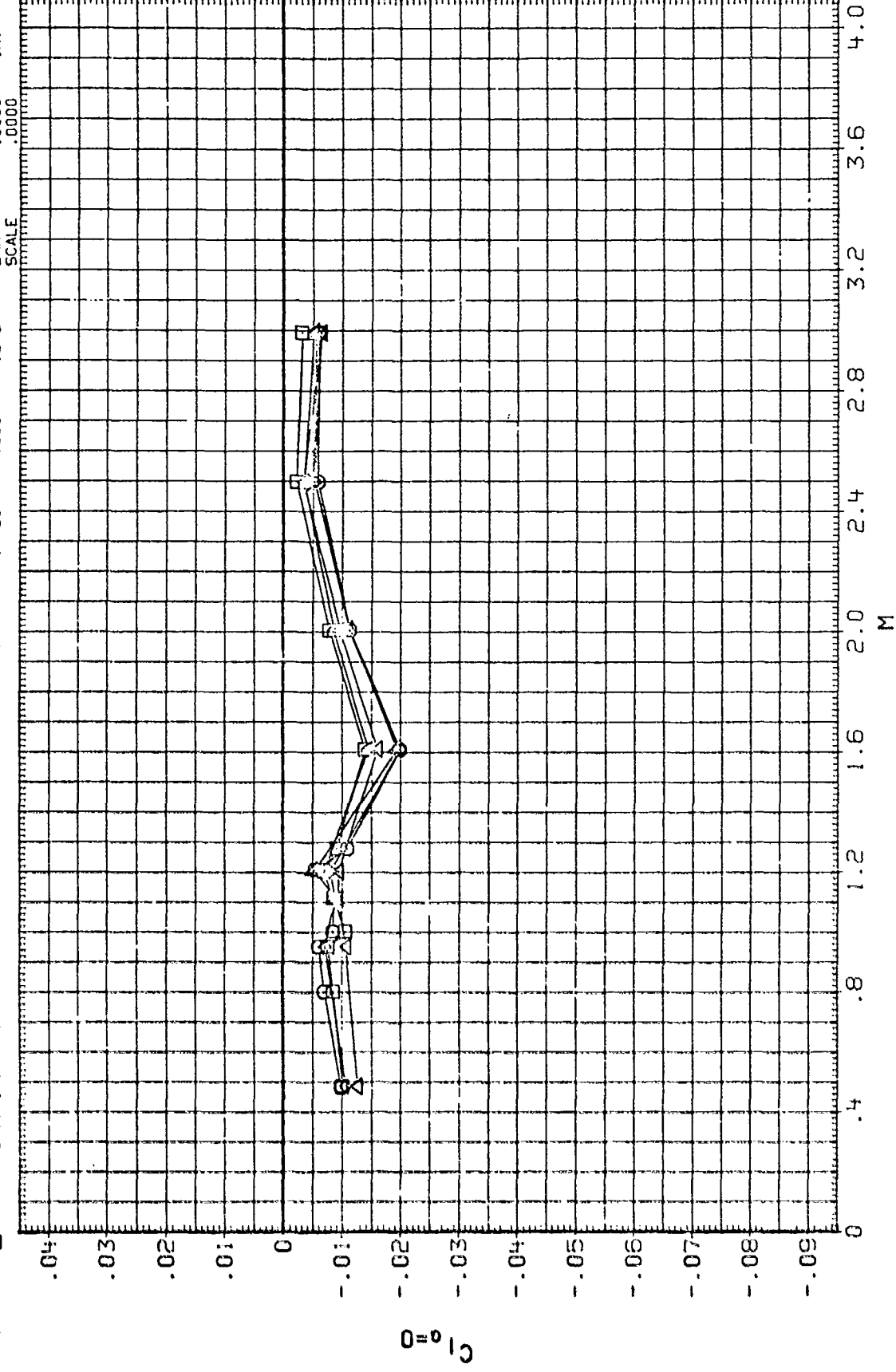
32.500 1.750 .000 .348 BREF 4.0000 IN.

22.500 1.750 .000 .348 XMRP .0000 IN.

45.000 1.750 .000 .348 YMRP .0000 IN.

45.000 1.750 .000 .348 ZMRP .0000 IN.

SCALE .0000

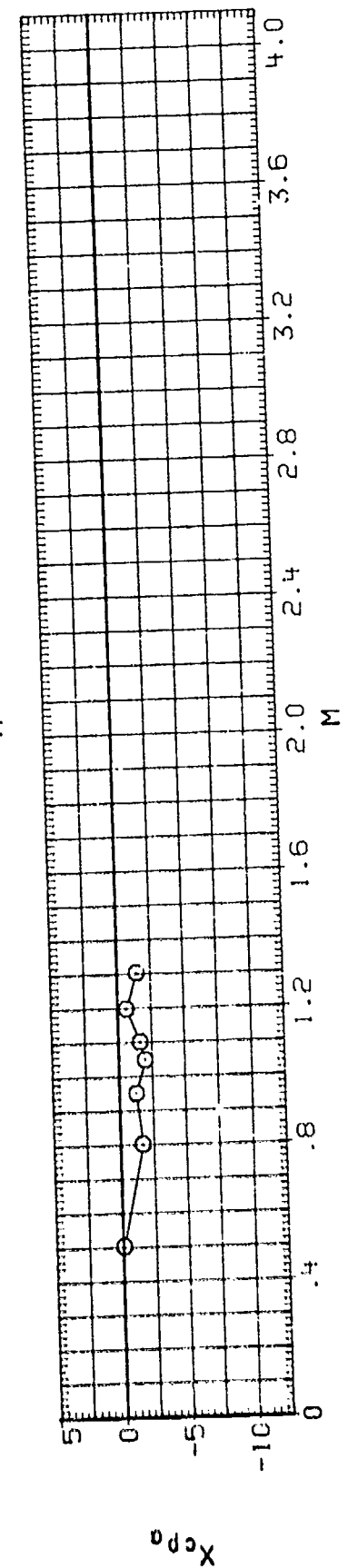
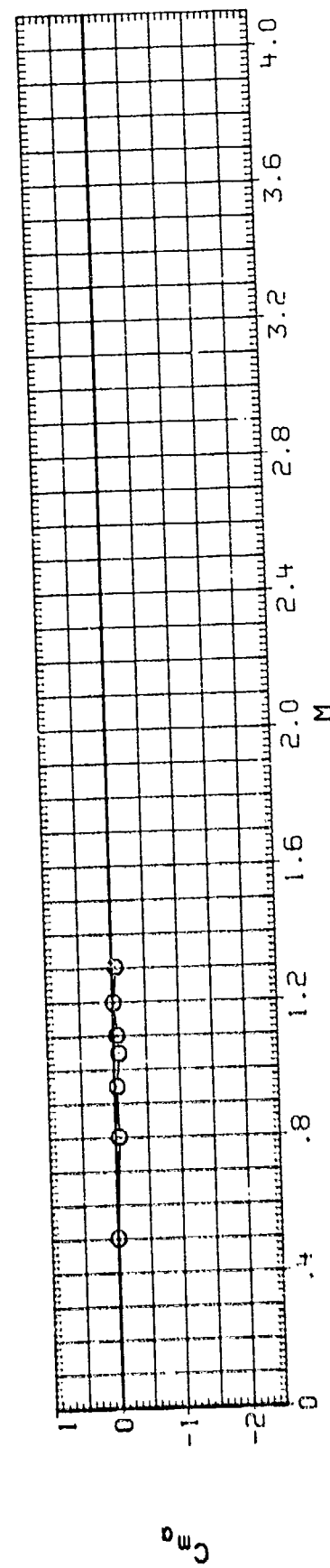
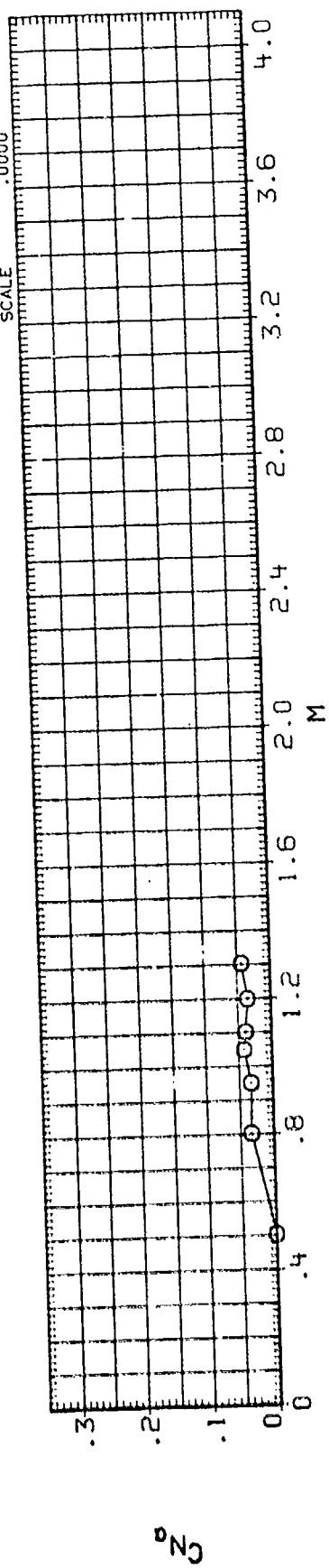


MAIN BALANCE COEFFICIENT SUMMARY, B1F21

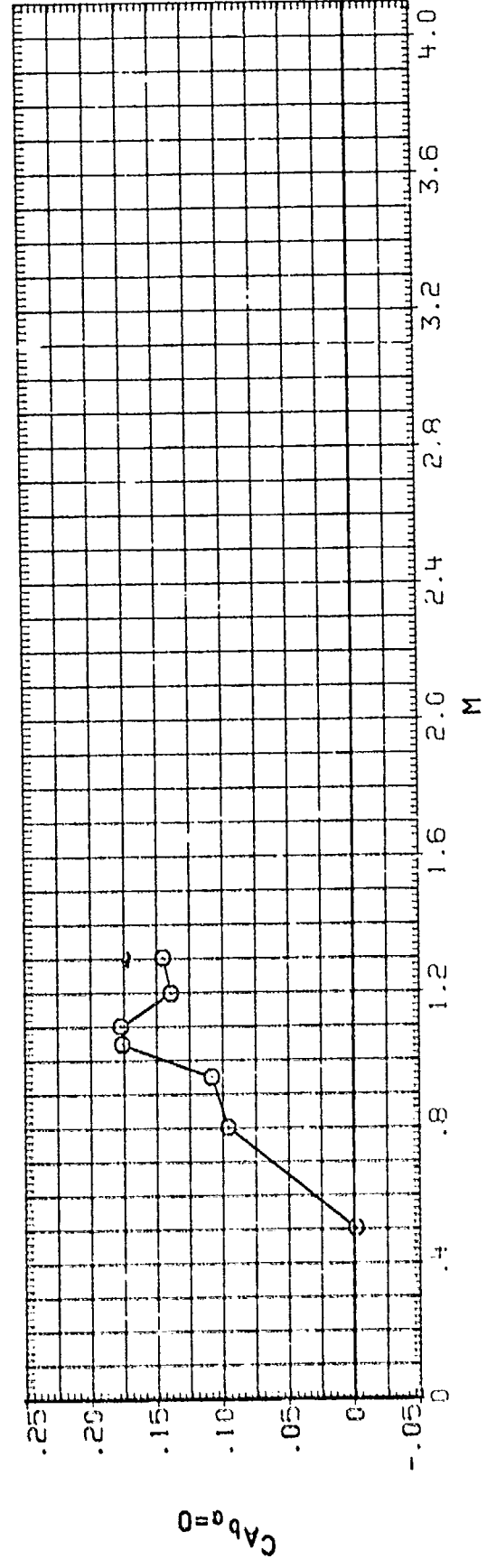
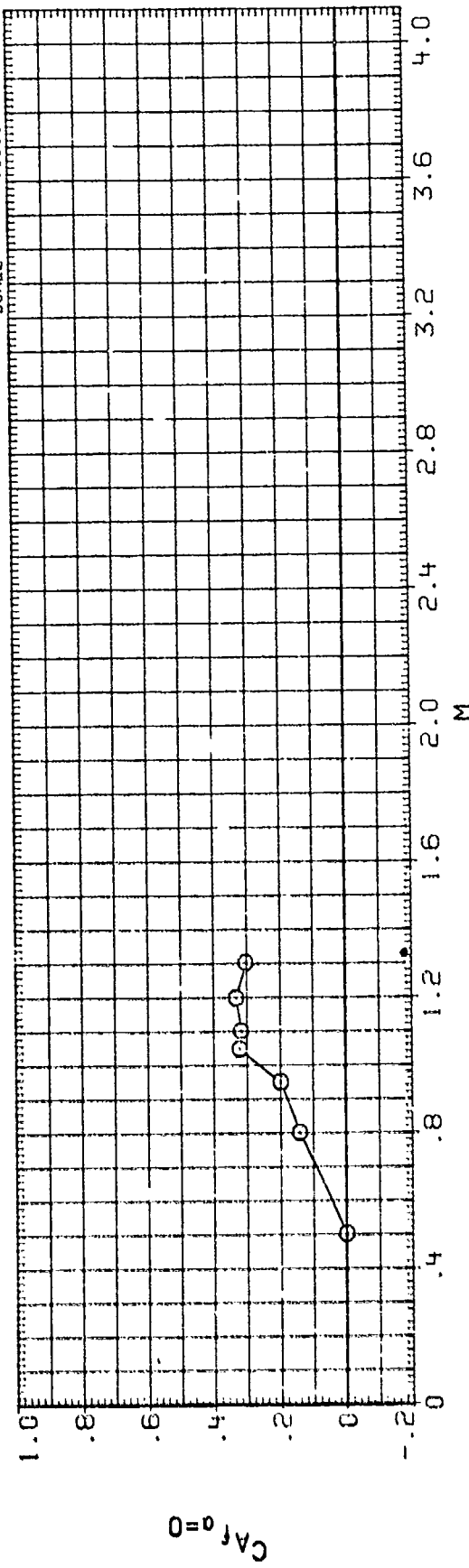
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 10193711 O AEDC-10:54:170.AFATL FIN STUDY B2 ALONE

PHI BETA PTOTL
 .000 .000 2600.000

REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 L REF 4.0000 INCHES
 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



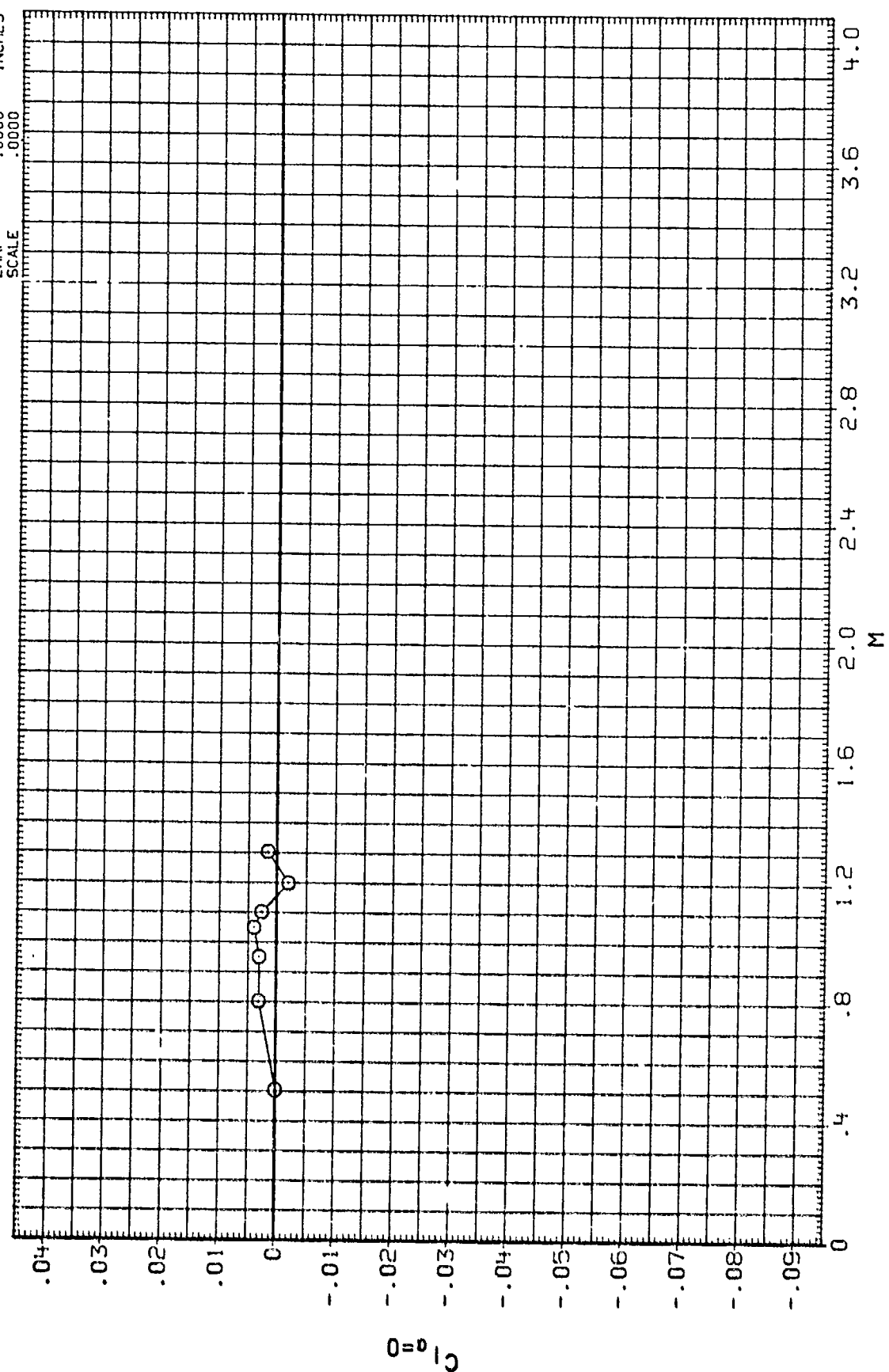
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	BETA	POTL	REFERENCE INFORMATION
(C19371)	C	AEDC-1C154/170.AFATL FIN STUDY B2 ALONE	.000	.000	2600.000	SREF 12.5660 SQ. IN.
						LREF 4.0000 INCHES
						BREF 4.0000 INCHES
						XMRP .0000 INCHES
						YMRP .0000 INCHES
						ZMRP .0000 INCHES
						SCALE .0000



DATA SET SYMBOL O AEDC-TC154/170, AFATL FIN STUDY B2 ALONE

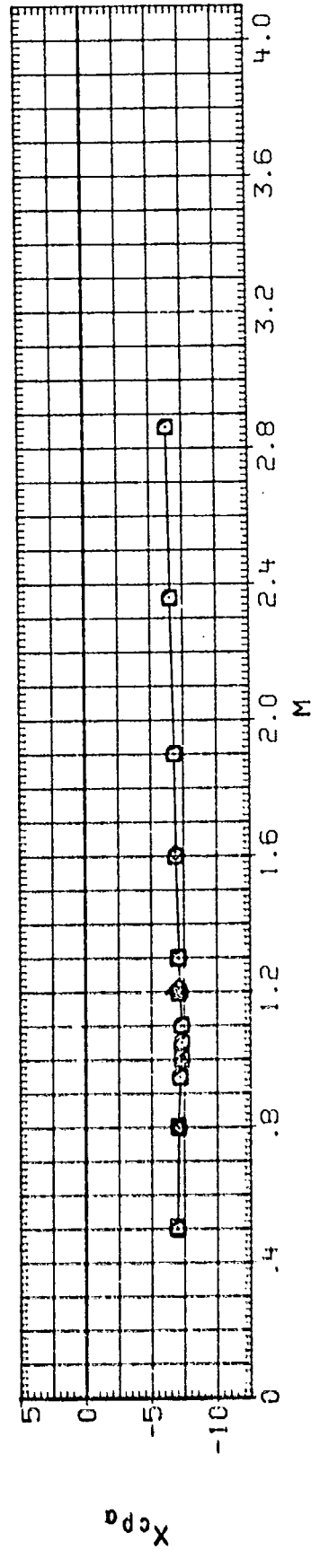
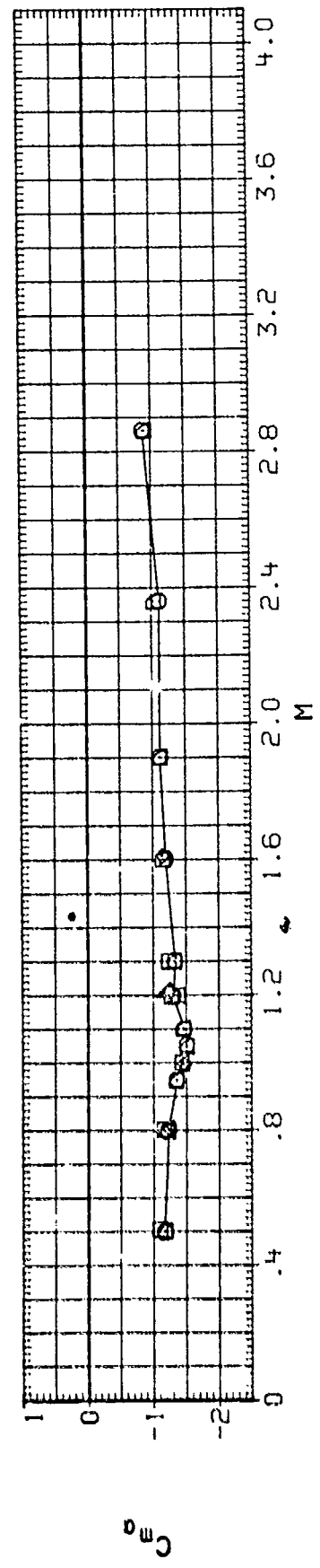
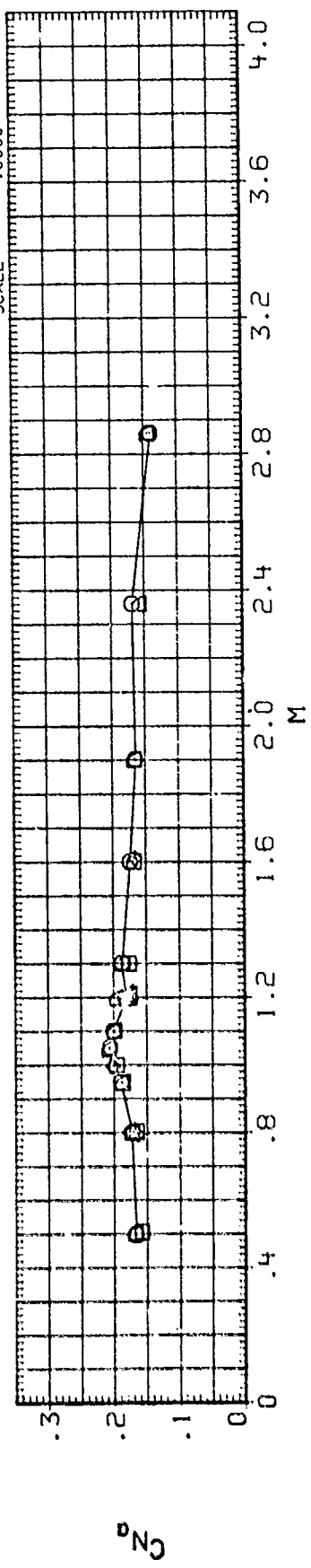
PHI .000 BETA .000 PTOTL 2600.000

REFERENCE INFORMATION
SREF 12.5660 SQ. IN.
LREF 4.0000 INCHES
BREF 4.0000 INCHES
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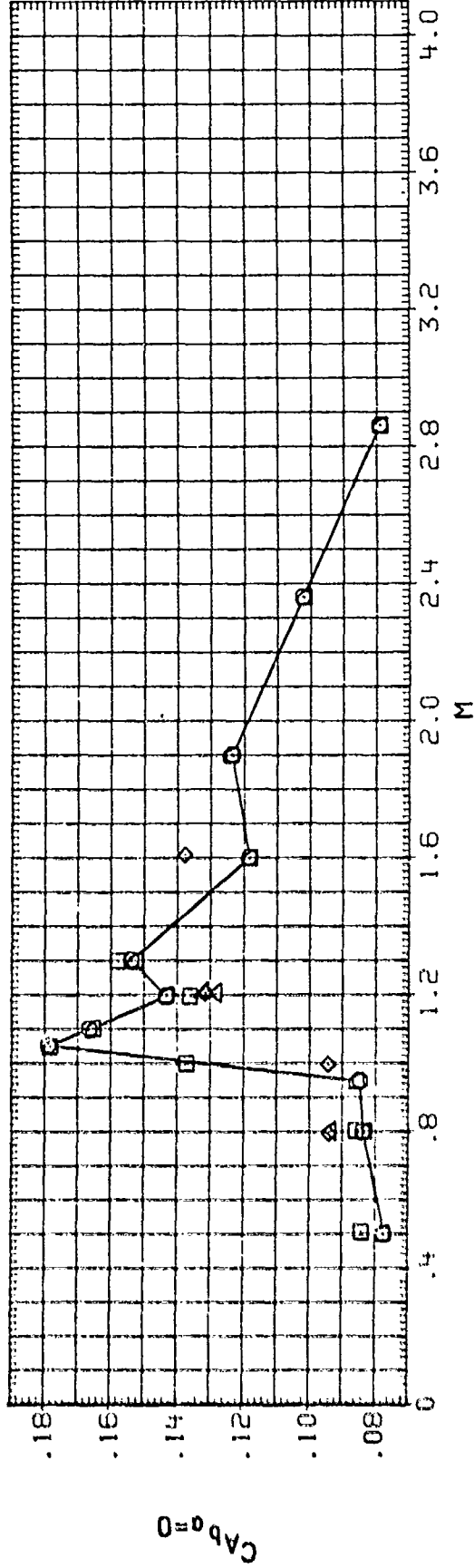
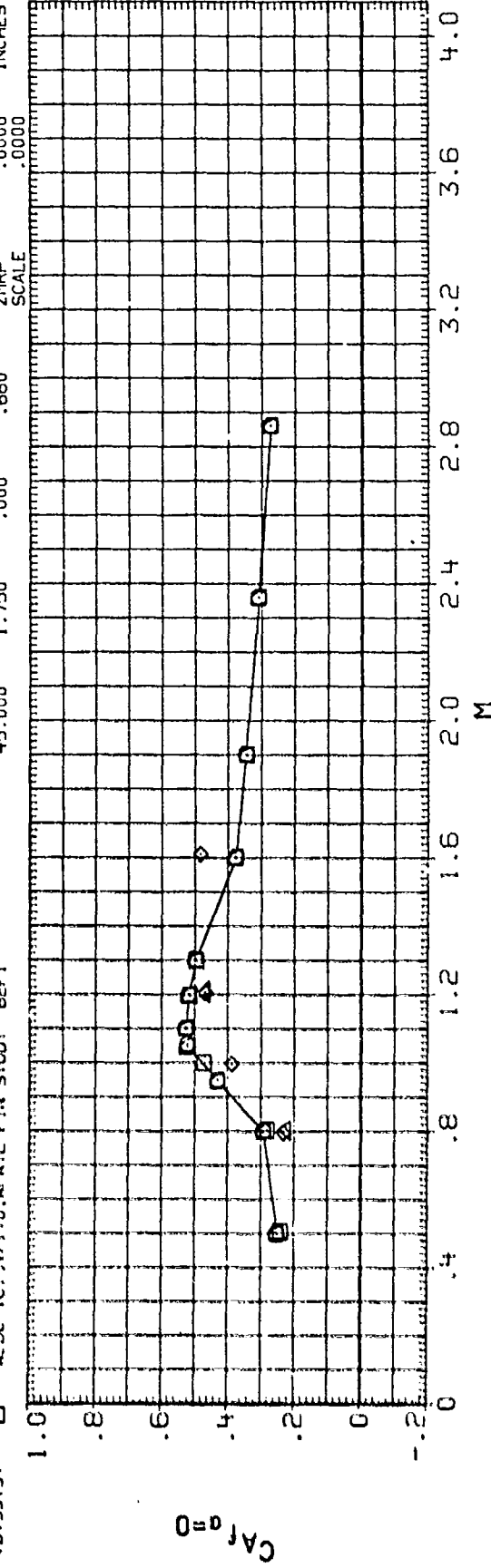


MAIN BALANCE COEFFICIENT SUMMARY, B2

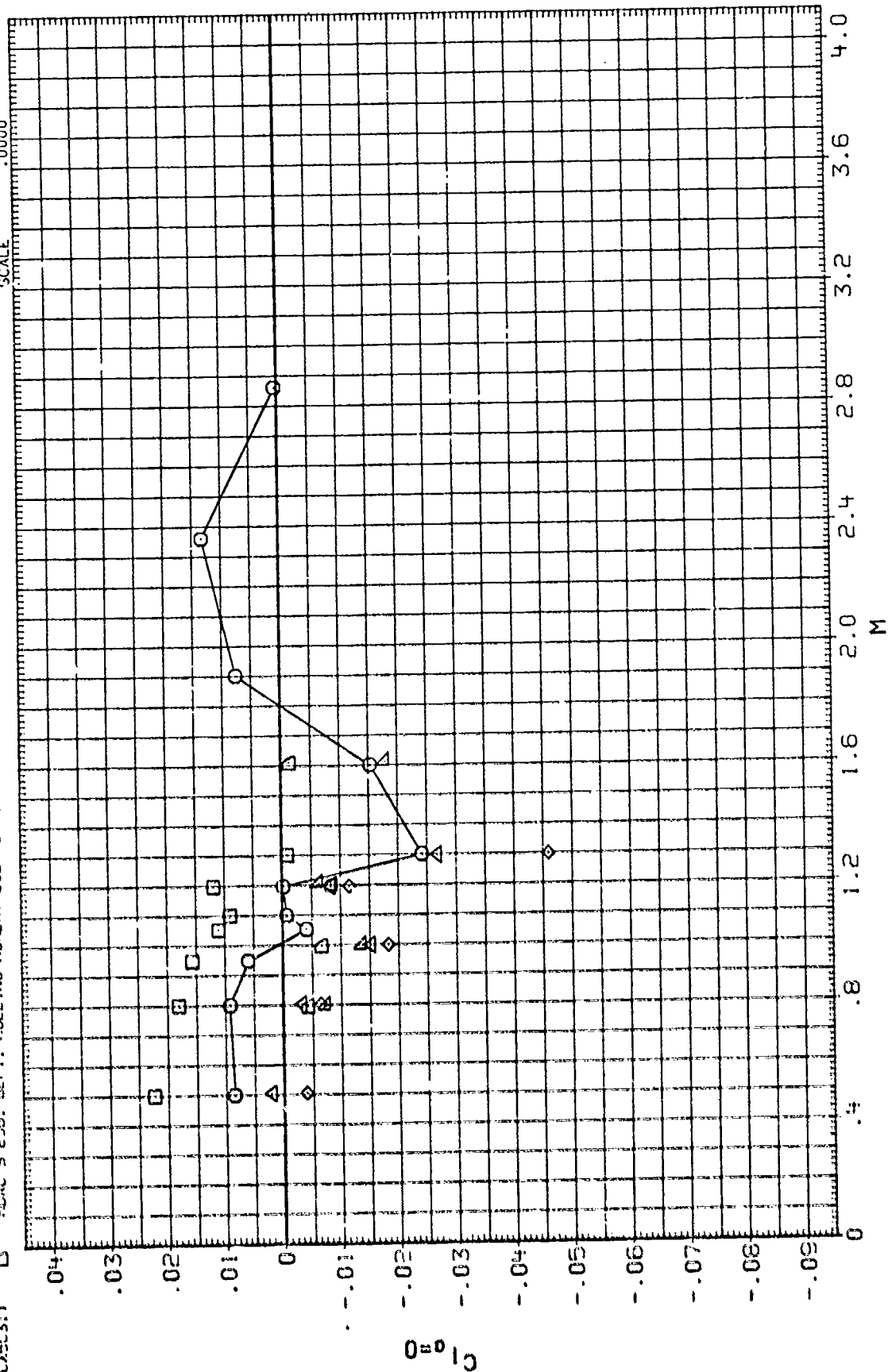
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/20	REFERENCE INFORMATION
(DT9274)	○	AEC-1C154/170.AFATL FIN STUDY B2F1	.000	1.750	.000	.660	SREF 12.5660 SQ. IN.
(DX3930)	◇	AEC 1C 273 WRAPAROUND FIN. B2F1	.000	1.750	.000	.660	LREF 4.0000 INCHES
(DX5931)	◇	MCAC S-255 WRAPAROUND FIN. B2F1	.000	1.750	.000	.660	RREF 4.0000 INCHES
(DX5932)	△	MCAC S-255 WRAPAROUND FIN. B2F1	22.500	1.750	.000	.660	XMRP .0000 INCHES
(DX5933)	△	MCAC S-255 WRAPAROUND FIN. B2F1	45.000	1.750	.000	.660	YMRP .0000 INCHES
(DT9275)	◇	AEC-1C154/170.AFATL FIN STUDY B2F1	45.000	1.750	.000	.660	ZMRP .0000 INCHES
							SCALE .0000



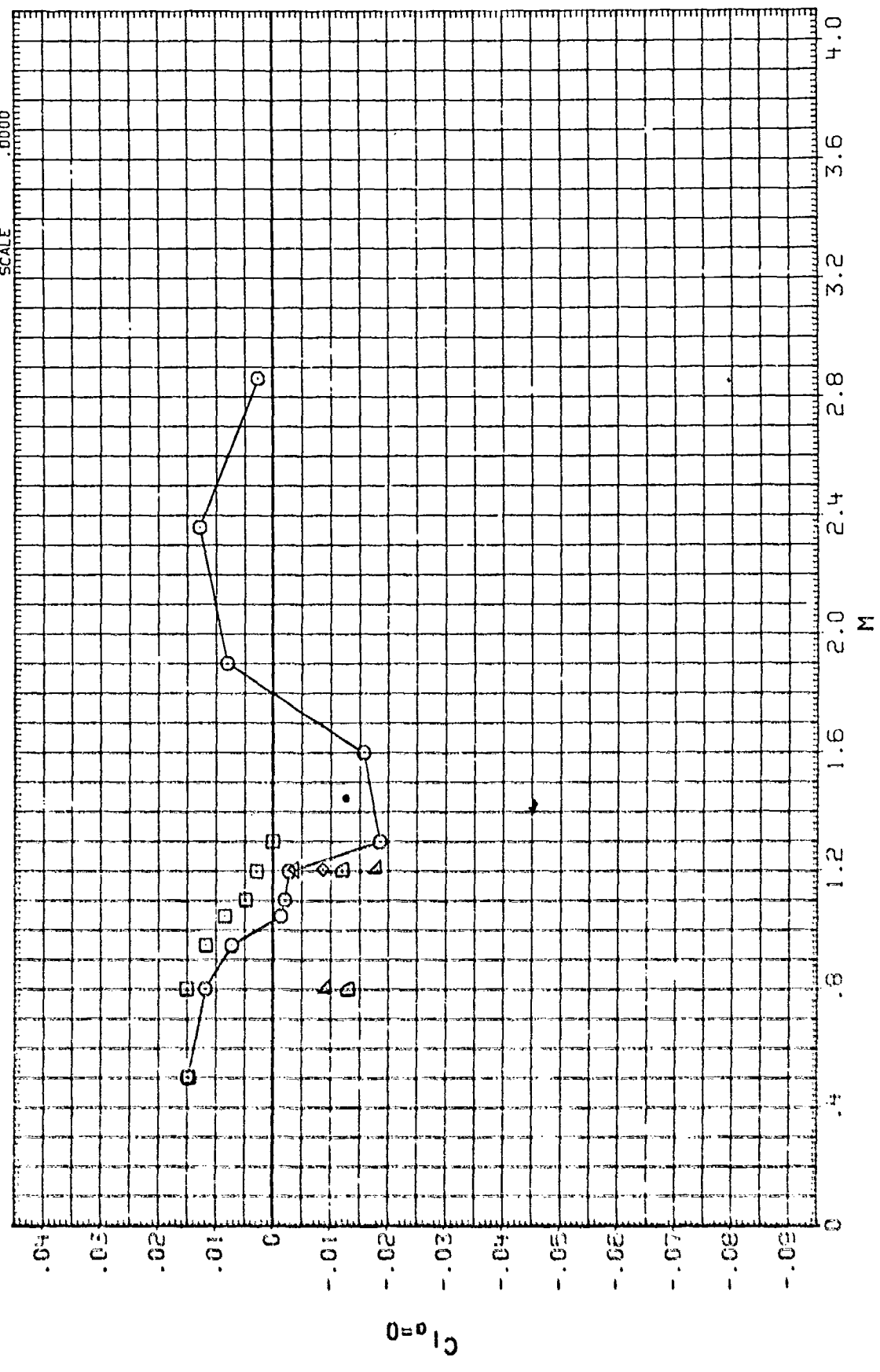
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/20	REFERENCE INFORMATION
(D19374)	□	AEDC-TC15/170 AFATL FIN STUDY B2F1	.000	1.750	.000	.660	SREF 12.5660 SQ. IN.
(DX2320)	□	AEDC TC 275 WRAPAROUND FIN. B2F1	.000	1.750	.000	.660	LREF 4.0000 INCHES
(DX2321)	◇	MOAC S-255 WRAPAROUND FIN. B2F1	.000	1.750	.000	.660	BREF 4.0000 INCHES
(DX2322)	△	MOAC S-255 WRAPAROUND FIN. B2F1	22.500	1.750	.000	.660	XMRP .0000 INCHES
(DX2323)	△	MOAC S-255 WRAPAROUND FIN. B2F1	45.000	1.750	.000	.660	YMRP .0000 INCHES
(D19375)	◇	AEDC-TC15/170 AFATL FIN STUDY B2F1	45.000	1.750	.000	.660	ZMRP .0000 INCHES



DATA SET	SWOOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(D19374)	□	AEDC-IC154/170 AFATL FIN STUDY B2F1	.000	1.750	.000	.660	SREF 12.5660 50. IN.
(D19374)	□	AEDC IC 154/170 B2F1, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.660	LREF 4.0000 INCHES
(DX1510)	◇	AEDC IC 273 ARAPAROUND FIN, B2F1	.000	1.750	.000	.660	BREF 4.0000 INCHES
(FX1510)	△	AEDC IC 273, B2F1, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.660	YMRP .0000 INCHES
(DX1511)	△	PCAC S-255 ARAPAROUND FIN B2F1	.000	1.750	.000	.660	ZMRP .0000 INCHES
(DX1511)	△	PCAC S-255, B2F1, ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.660	SCALE .0000



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(D18B751)	AEDC TC154/170 AFATL FIN STUDY B2F1	45.000	1.750	.000	.660	SREF 12.5660 SQ. IN.
(D18B751)	AEDC TC 154/170 B2F1, ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.660	LREF 4.0000 INCHES
(D18B751)	MCAC S-255 WRAPAROUND FIN B2F1	45.000	1.750	.000	.660	BREF 4.0000 INCHES
(D18B751)	MCAC S-255 B2F1, ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.660	XMRP .0000 INCHES
(D18B751)	MCAC S-255 WRAPAROUND FIN B2F1	22.500	1.750	.000	.660	YMRP .0000 INCHES
(D18B751)	MCAC S-255 B2F1, ROLLING MOMENT DUE TO FIN	22.500	1.750	.000	.660	ZMRP .0000 INCHES
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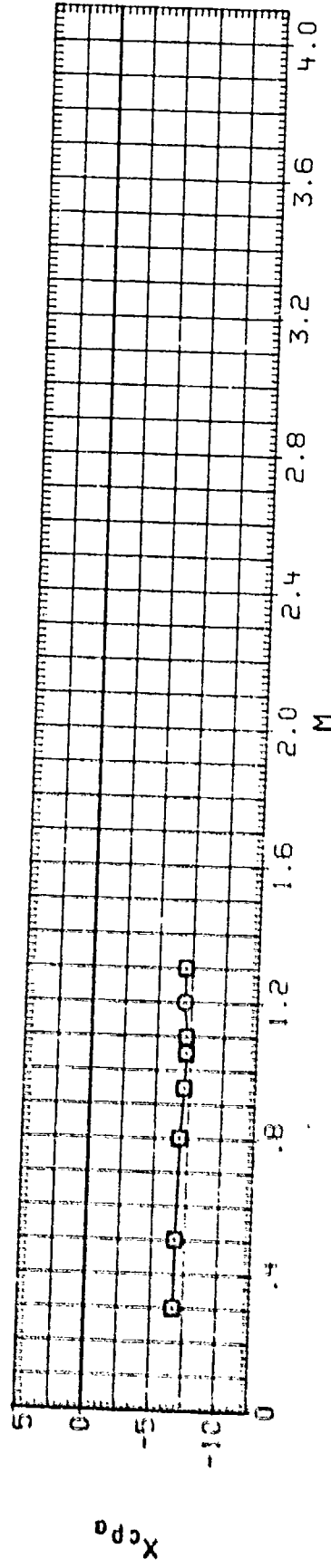
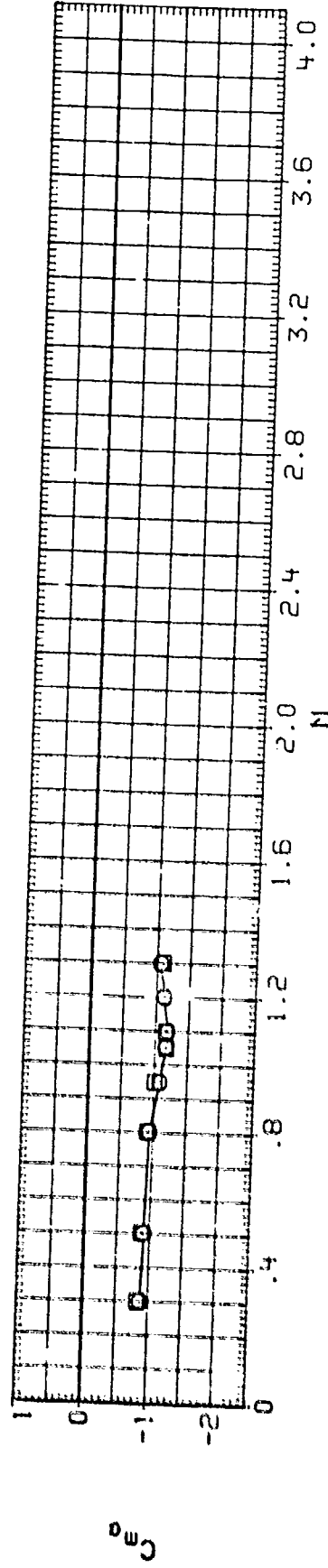
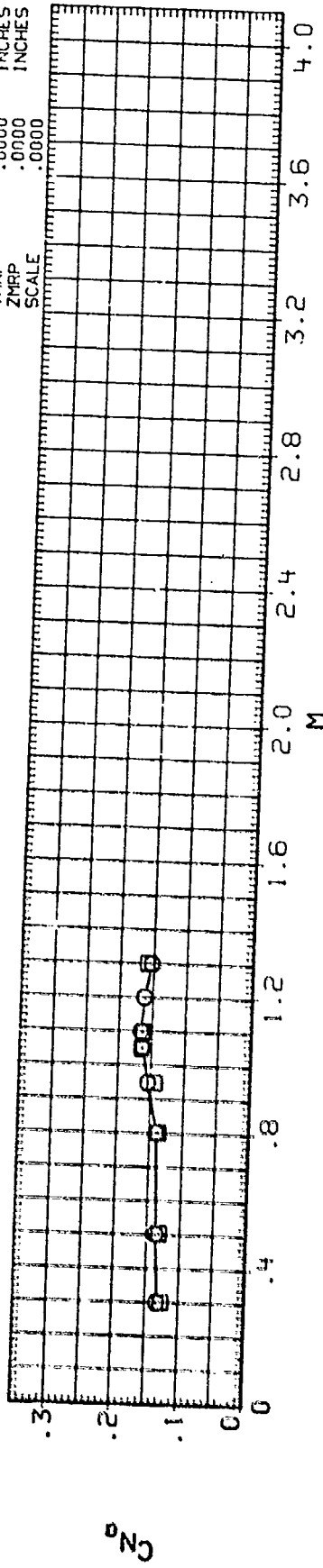


MAIN BALANCE COEFFICIENT SUMMARY, B2F1

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (C15533) 0 AEDC-IC154/170.AFATL FIN STUDY B2F10
 (C15533) 0 AEDC-IC154/170.AFATL FIN STUDY B2F10

PHI .000
 45.000
 C/D 1.750
 1.750
 LAMBDA .000
 .000
 B/2D .610
 .610

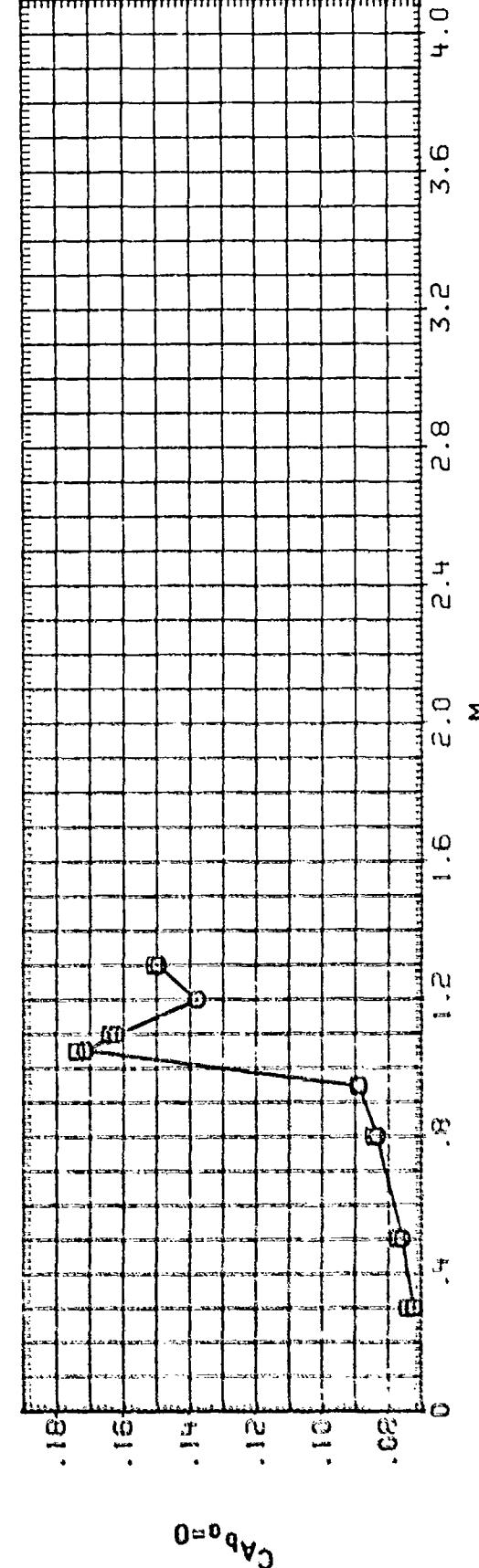
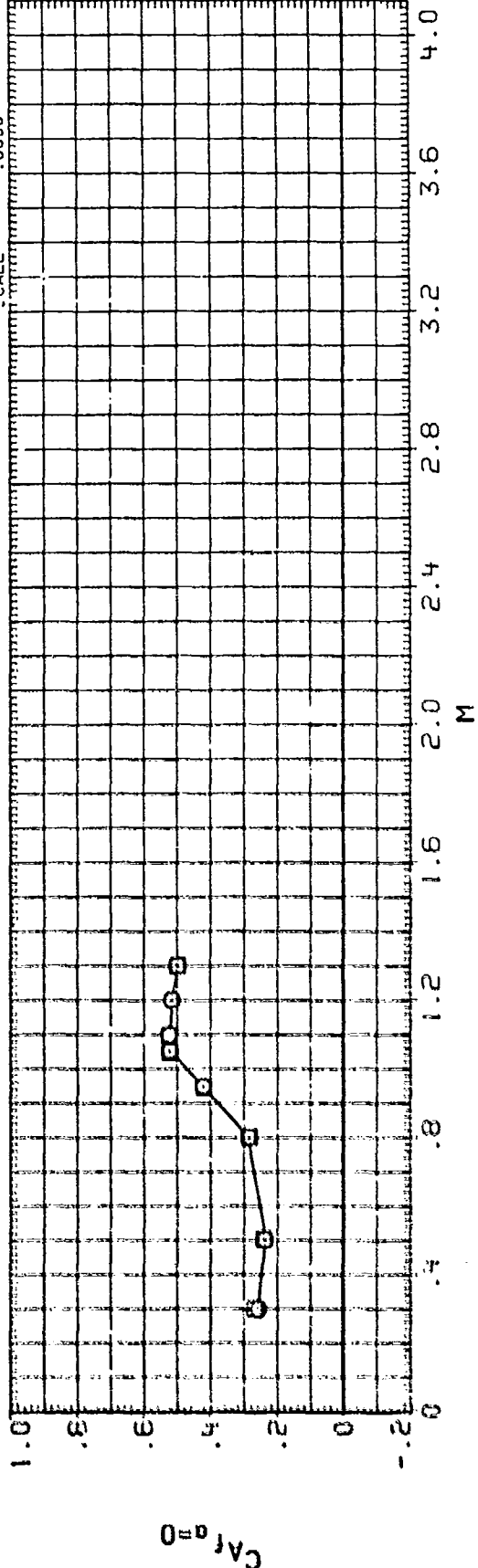
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 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B2F10

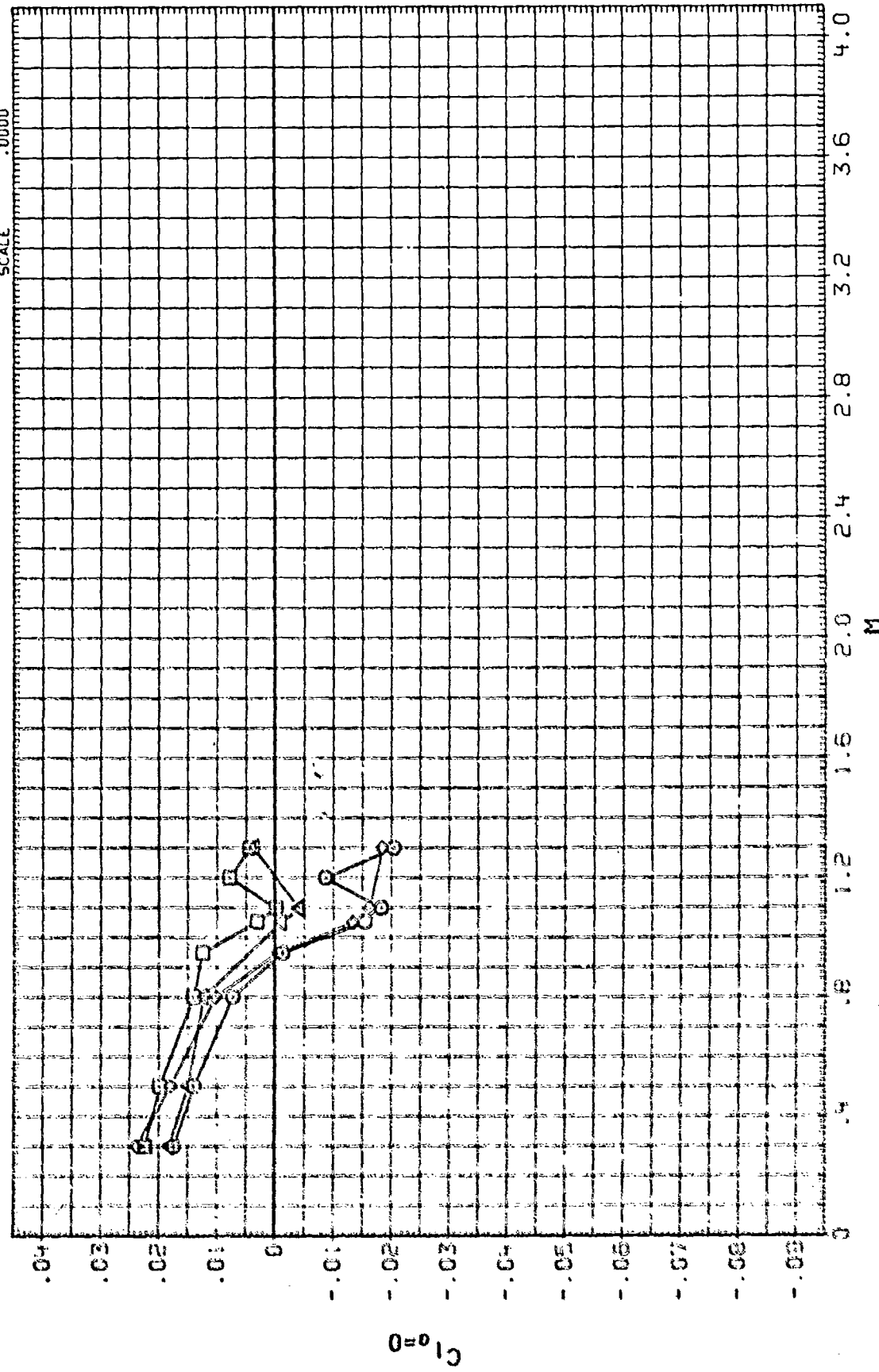
DATA SET: SYMBOL CONFIGURATION DESCRIPTION
 (C19881) O AEOC-IC154/170.AFATL FIN STUDY B2F10
 (C19881) □ AEOC-IC154/170.AFATL FIN STUDY B2F10

PHI C/D LAMBDA B/2D REFERENCE INFORMATION
 .000 1.750 .000 .610 SREF 12.5660 50. IN.
 45.000 1.750 .000 .610 LREF 4.0000 INCHES
 .000 .000 .000 .000 BREF 4.0000 INCHES
 .000 .000 .000 .000 XMRP .0000 INCHES
 .000 .000 .000 .000 YMRP .0000 INCHES
 .000 .000 .000 .000 ZMRP .0000 INCHES
 SCALE



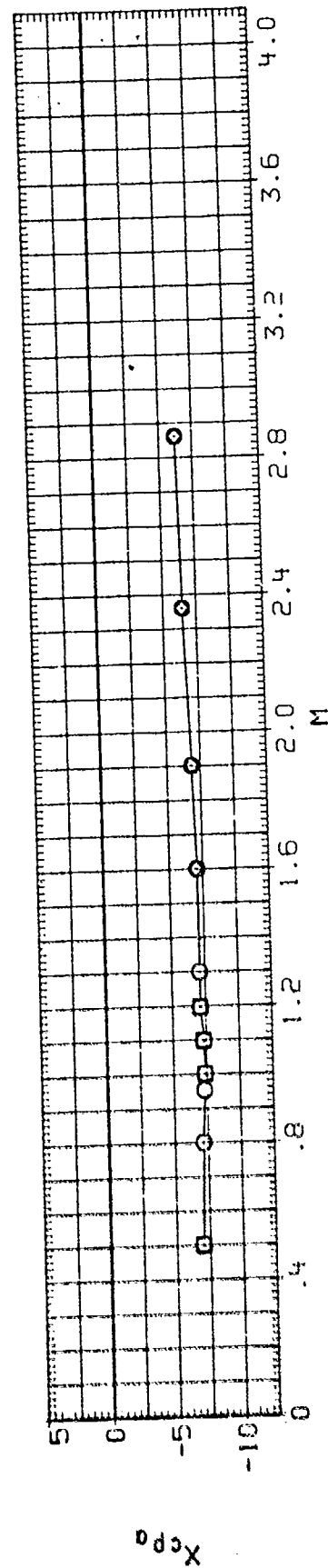
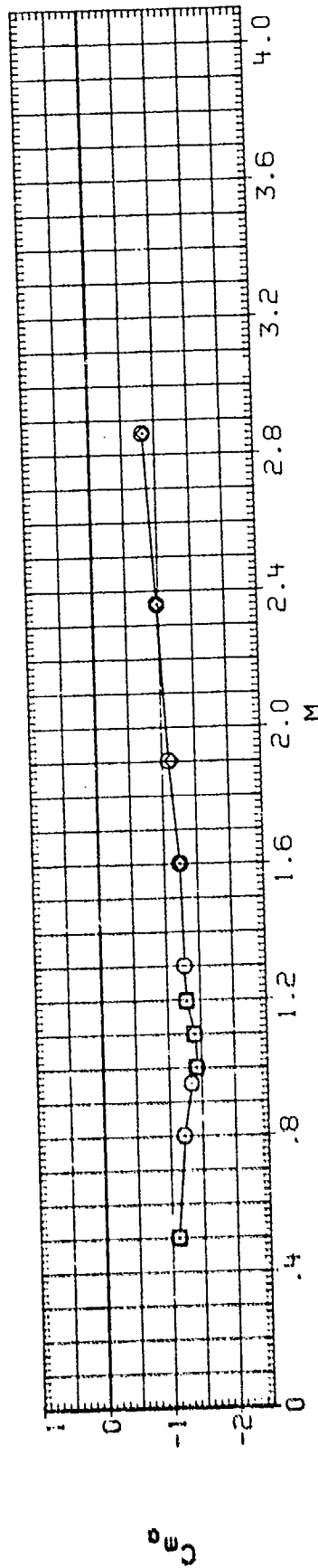
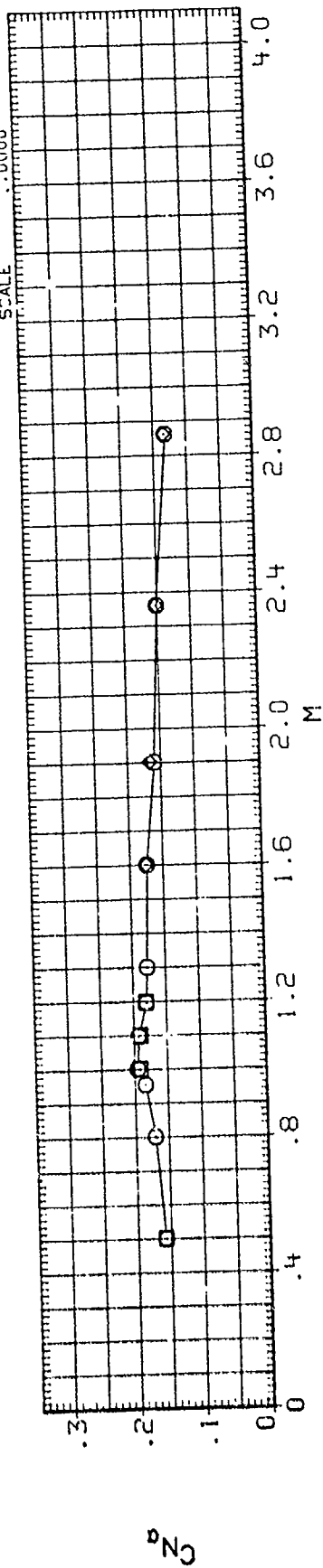
MAIN BALANCE COEFFICIENT SUMMARY, B2F10

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMSDA	B/20	REFERENCE INFORMATION
IC18821	□	AEDC-TC15A170-AFAL F/N STUDY B2F10	.000	1.750	.000	.610	SREF 12.5660 50. IN.
IC18821	□	AEDC-TC15A170-B2F10. ROLLING MOMENT DUE TO FIN	.000	1.750	.000	.610	LREF 4.0000 INCHES
IC18821	○	AEDC-TC15A170-AFAL F/N STUDY B2F10	45.000	1.750	.000	.610	RREF 4.0000 INCHES
IC18821	△	AEDC-TC15A170-B2F10. ROLLING MOMENT DUE TO FIN	45.000	1.750	.000	.610	XMRP .0000 INCHES
							YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B2F10

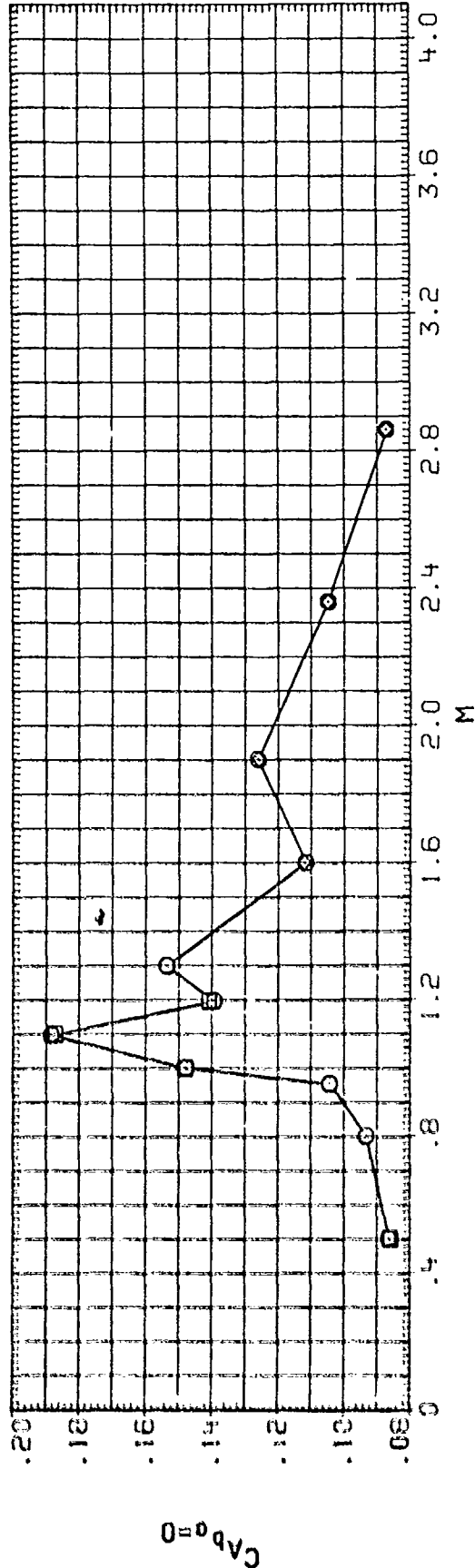
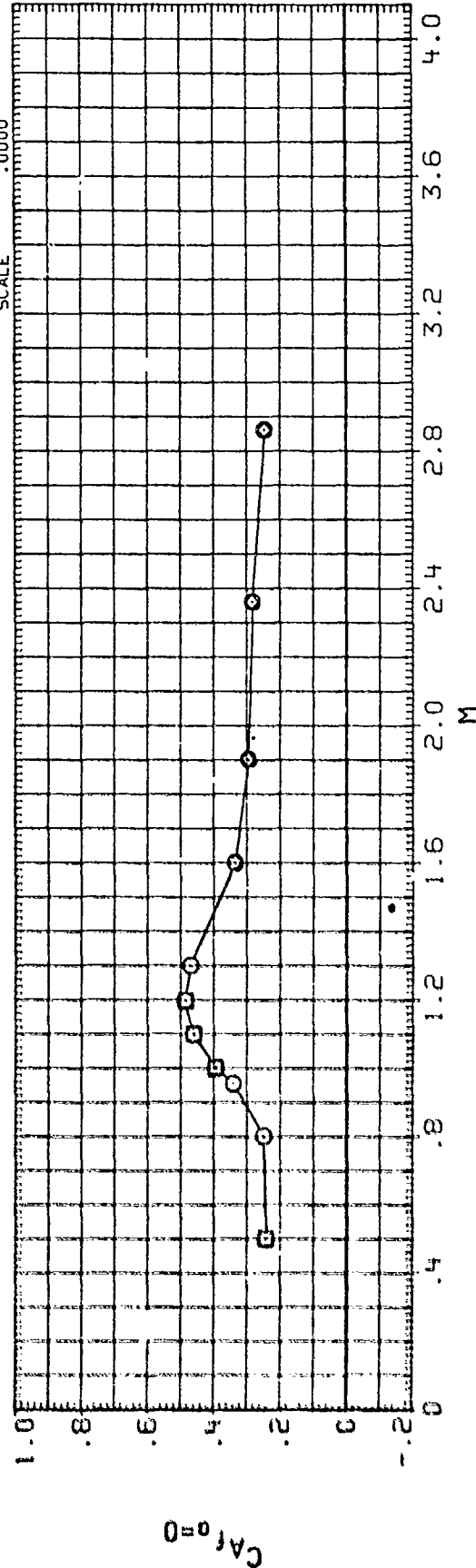
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(JTB815)	○	AEDC-TC-202. WAF FIN STUDY. B2F13	.000	1.750	33.900	.657	SREF 12.5660 SQ. IN.
(CTB816)	□	AEDC-TC-202. WAF FIN STUDY. B2F13	45.000	1.750	33.900	.657	LREF 4.0000 INCHES
(ELX824)	◇	LARC UPWT 980 AMC WRAP AROUND FIN MODEL B2F13	45.000	1.750	33.900	.665	BREF 4.0000 INCHES
							YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



DATA SET: SWEDL CONFIGURATION DESCRIPTION
 (JTB815) AEDC-TC-202. WAF FIN STUDY. B2F13
 (CTB816) AEDC-TC-202. WAF FIN STUDY. B2F13
 (ELX821) LAEC UPWT 980 AMC WRAP AROUND FIN MODEL B2F13

PHI C/D LAMBDA B/20
 .000 1.750 33.900 .657
 45.000 1.750 33.900 .657
 45.000 1.750 33.900 .665

REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 LREF 4.0000 INCHES
 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B2F13

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(J2215) ○ AEDC-1C-202. WAF FIN STUDY. B2F13

(O18215) □ AEDC-1C-202. B2F13. ROLLING MOMENT DUE TO FIN

(O18216) ◇ AEDC-1C-202. WAF FIN STUDY. B2F13

(O18224) △ LARC LPAT 980. AWC WRAP AROUND FIN MODEL. B2F13

(O18216) △ AEDC-1C-202. B2F13. ROLLING MOMENT DUE TO FIN

REFERENCE INFORMATION

SREF 12.5560 SQ. IN.

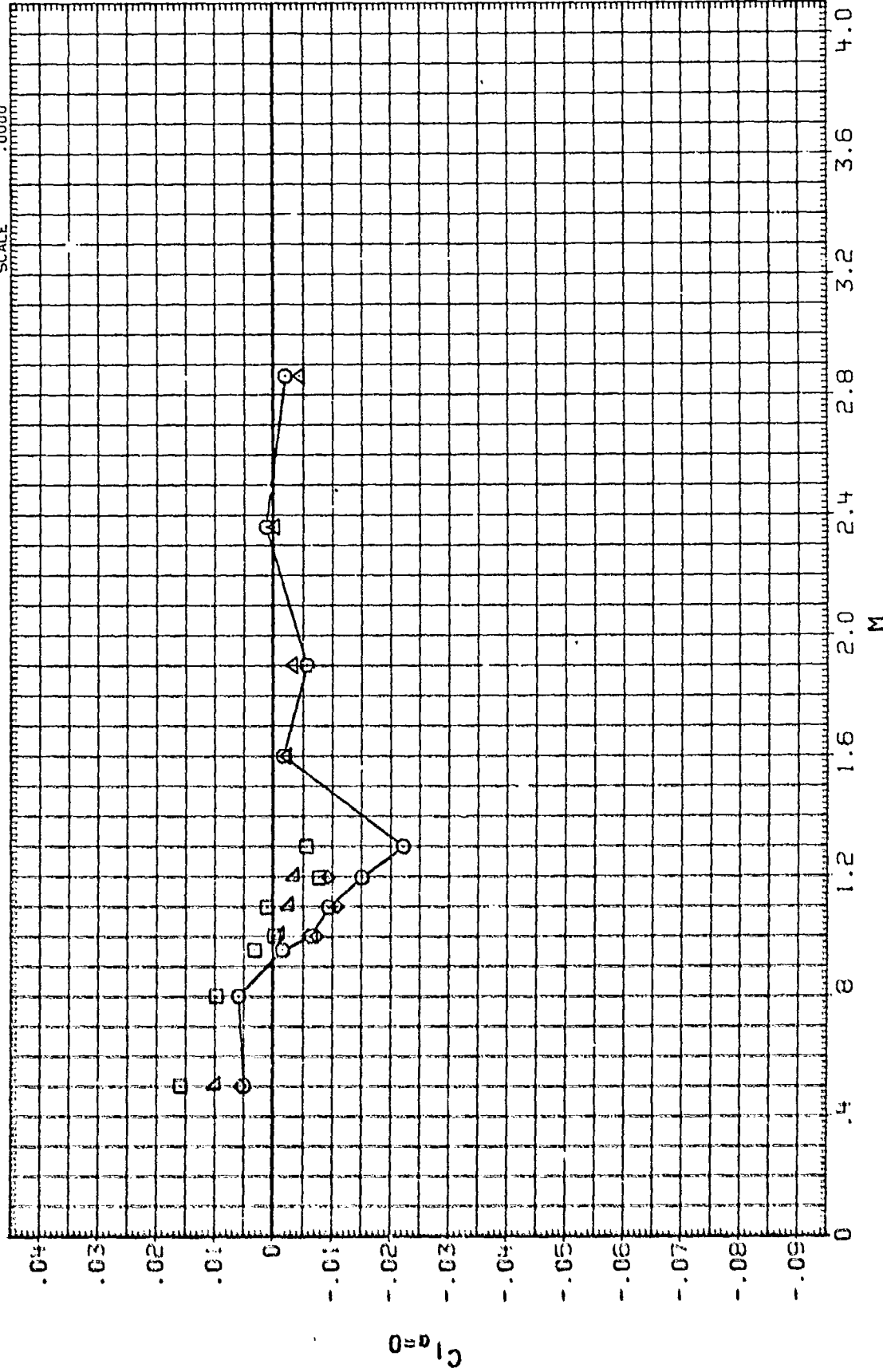
LREF 4.0000 INCHES

BREF 4.0000 INCHES

YMRP .0000 INCHES

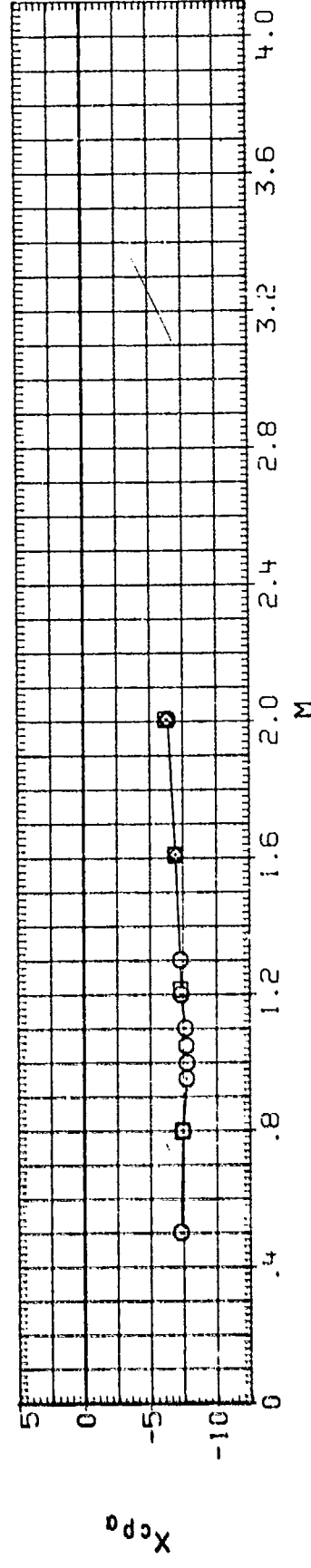
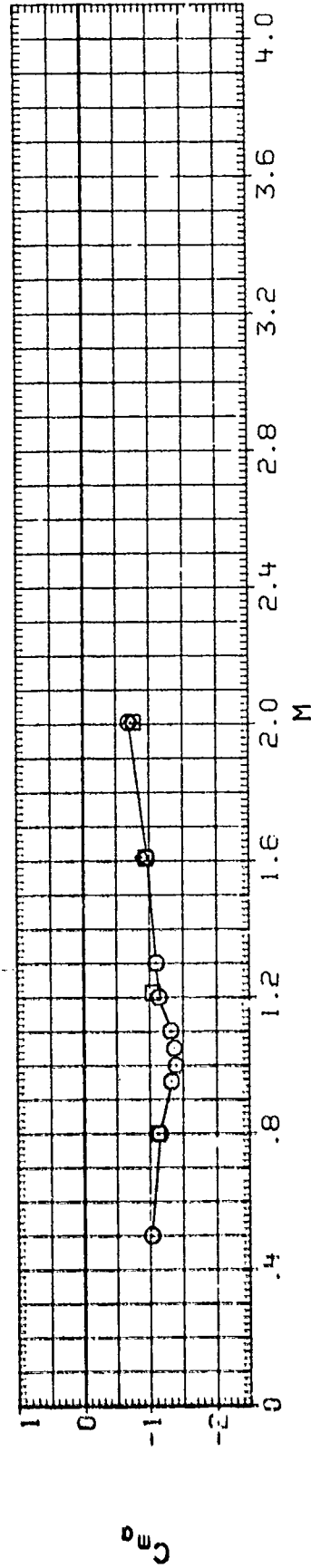
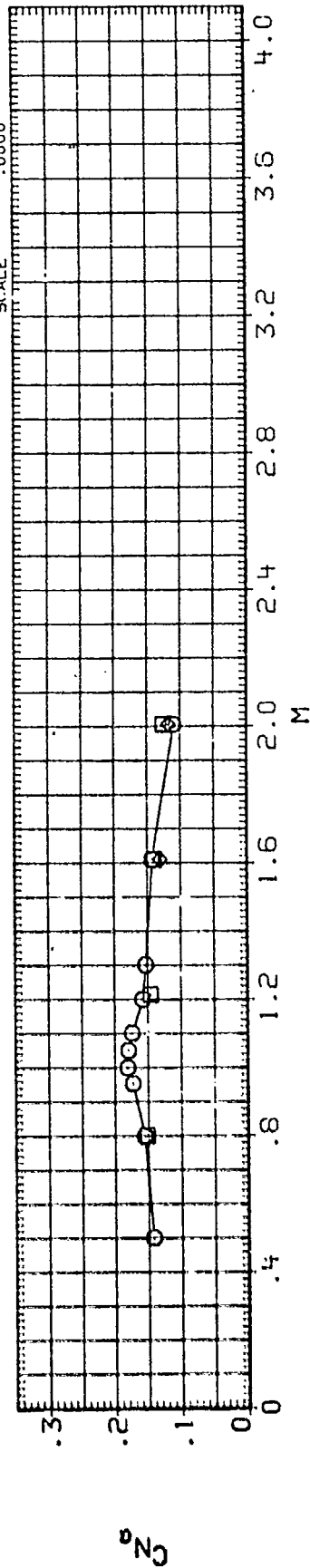
ZMRP .0000 INCHES

SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B2F13

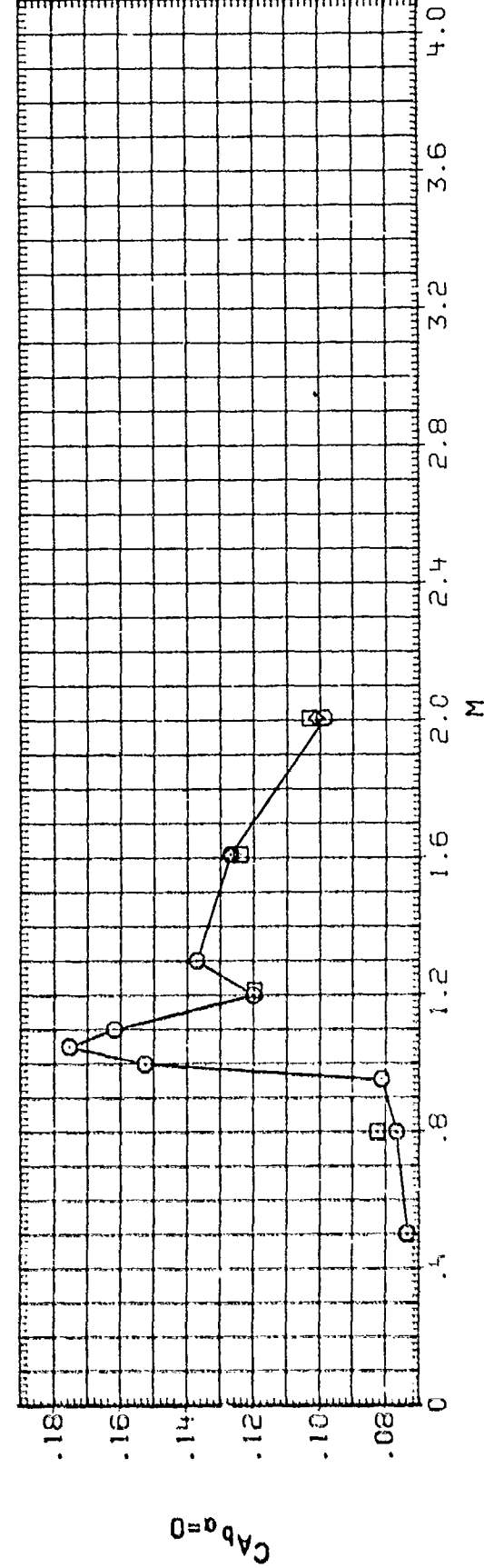
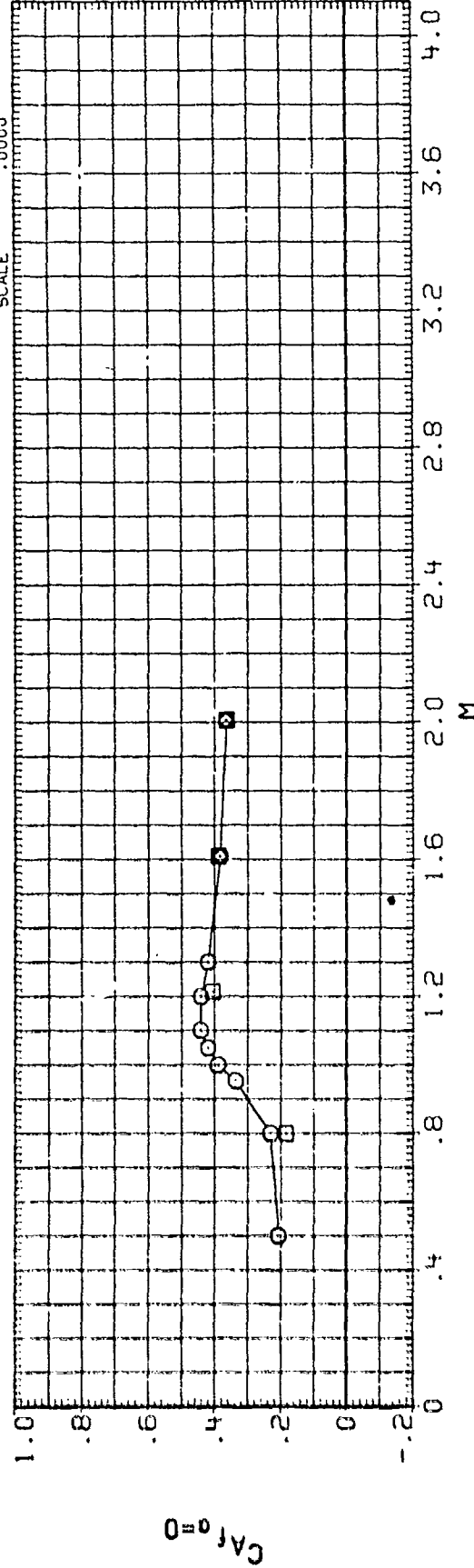
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
101B314)	○	AECG-TC-202, WAF FIN STUDY, B3F2	.000	1.000	.000	.650	SREF 12.5660 SQ. IN.
10XES35)	□	WDAC S-255 WRAPAROUND FIN B3F2	22.500	1.000	.000	.650	LREF 4.0000 INCHES
10XES36)	◇	WDAC S-255 WRAPAROUND FIN B3F2	45.000	1.000	.000	.650	BREF 4.0000 INCHES
							XMRP .0000 INCHES
							YMRP .0000 INCHES
							ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B3F2

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (D1E214) O AEDC-TC-202, WAF FIN STUDY, B3F2
 (D1E225) O MDAC S-255 WAPAROUND FIN B3F2
 (D1E235) O MDAC S-255 WAPAROUND FIN B3F2

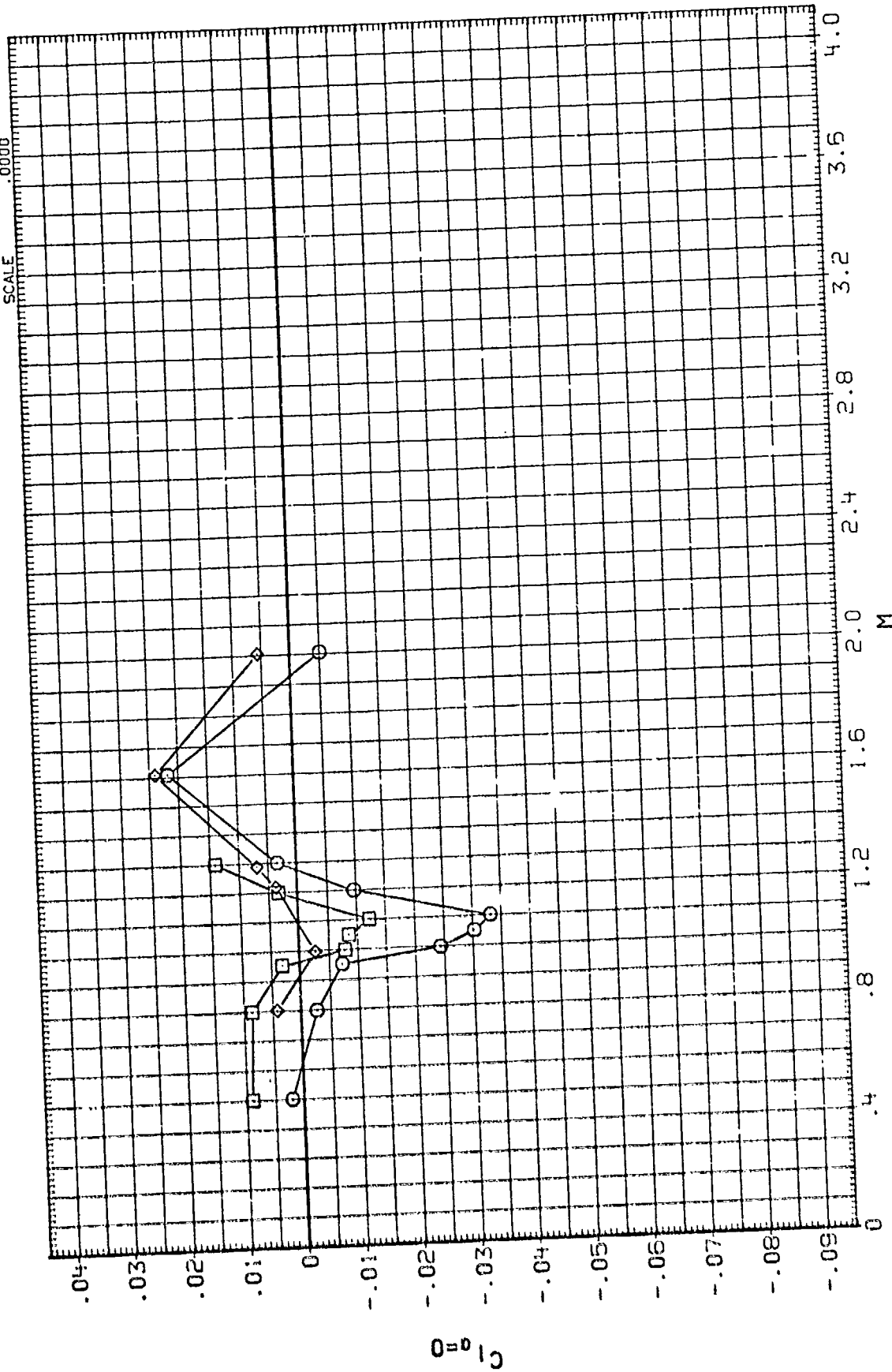
PHI C/D LAMBOA B/2D REFERENCE INFORMATION
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 22.500 1.000 .000 .650 LREF 4.0000 INCHES
 45.000 1.000 .000 .650 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



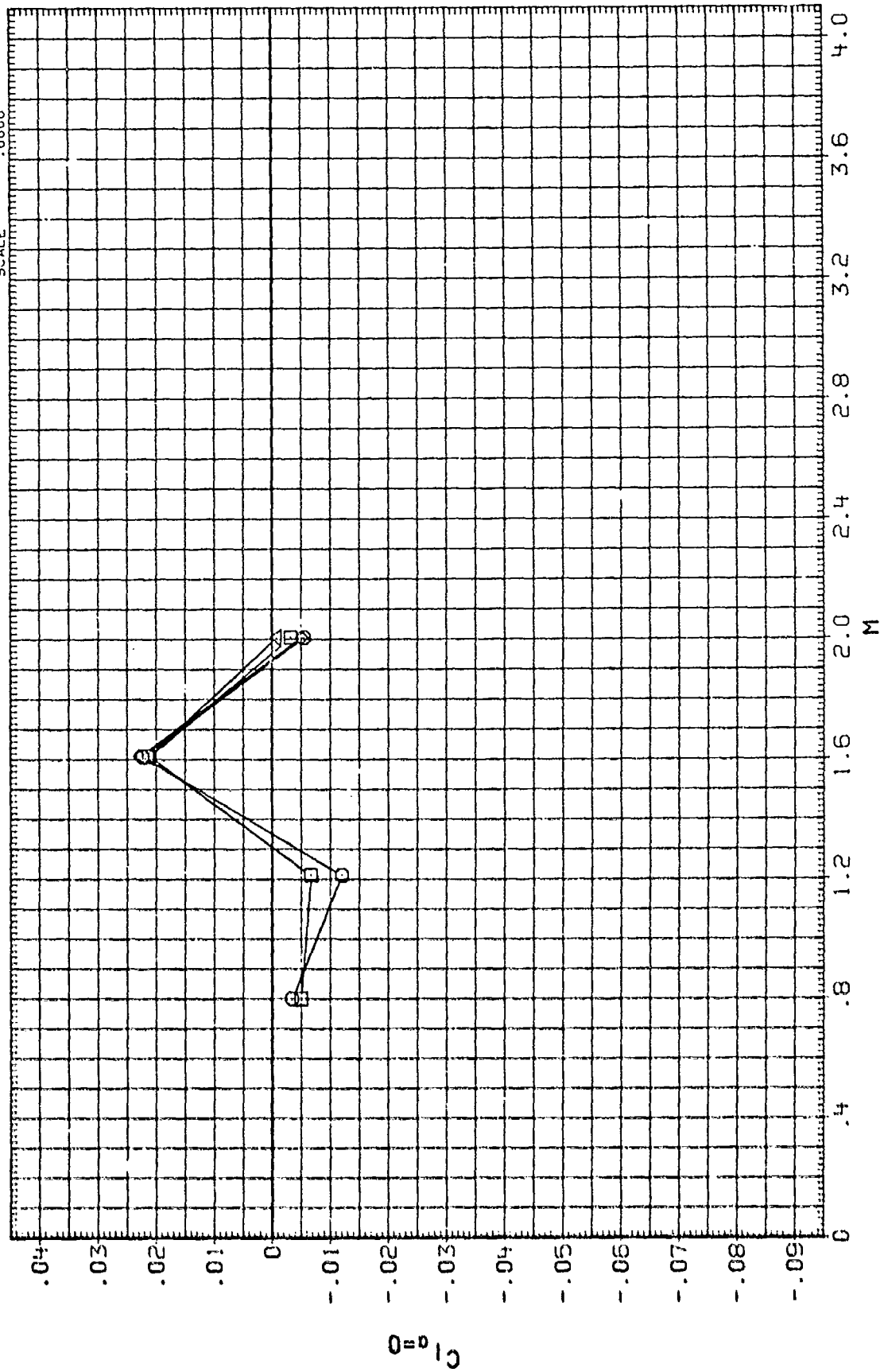
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 SCALE .0000

PHI .000
 C/D 1.000
 LAMBDA .000
 B/2D .650

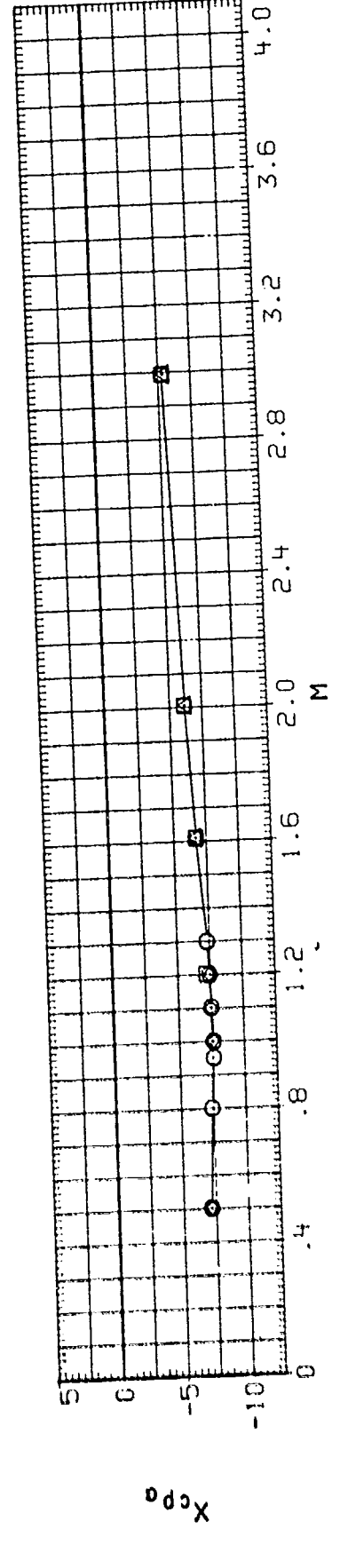
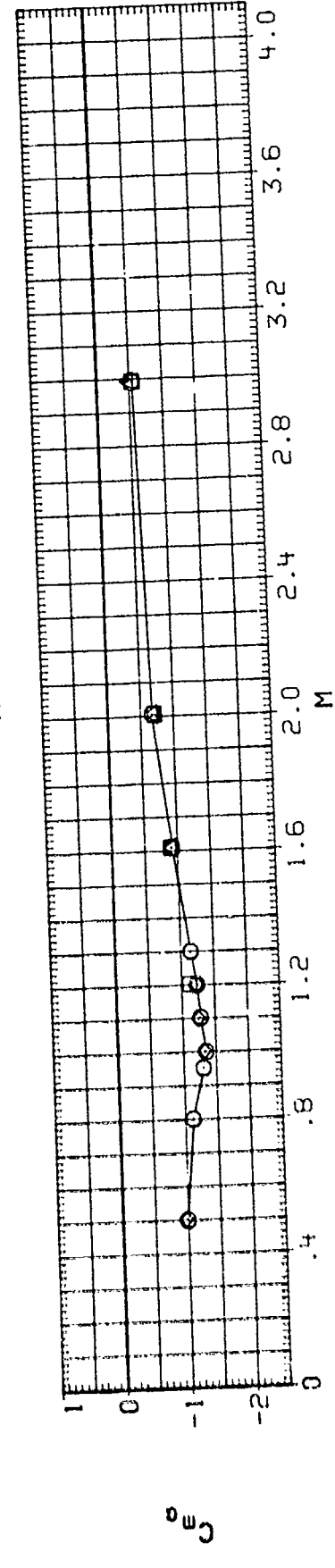
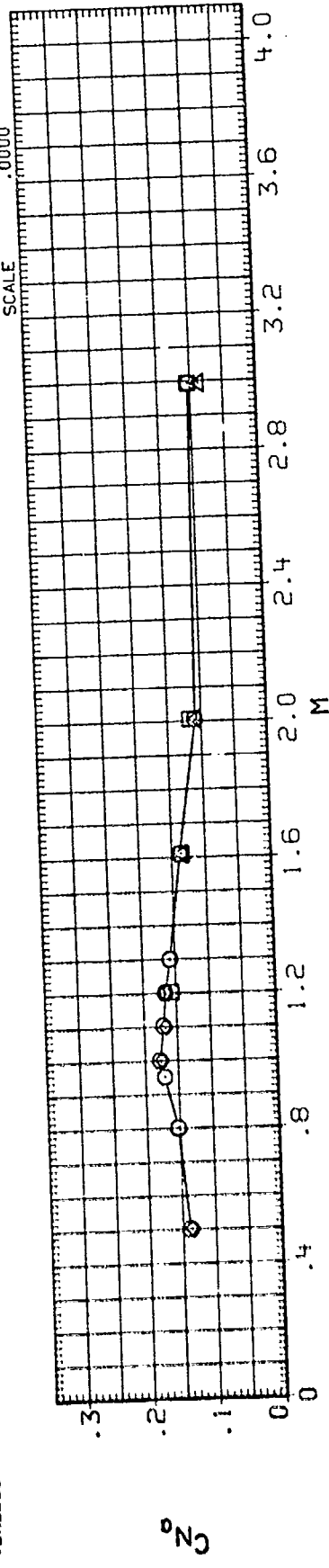
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (DTB314) AEDC-TC-202. WAF FIN STUDY. B3F2
 (DTB314) AEDC TC 202. B3F2. ROLLING MOMENT DUE TO FIN
 (CXSC34) MDAC S 255. B3F2. ROLLING MOMENT DUE TO FIN



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(DX58351)	○	MDAC S-256 WRAPAROUND FIN B3F2	22.500	1.000	.000	.650	SREF 12.5560 IN.50.
(CX58351)	□	MDAC S-256, B3F2, ROLLING MOMENT DUE TO FIN	22.500	1.000	.000	.650	LREF 4.0000 IN.
(DX58351)	◇	MDAC S-256 WRAPAROUND FIN B3F2	45.000	1.000	.000	.650	BREF 4.0000 IN.
(CX58351)	△	MDAC S-256, B3F2, ROLLING MOMENT DUE TO FIN	45.000	1.000	.000	.650	XMRP .0000 IN.
							YMRP .0000 IN.
							ZMRP .0000 IN.
							SCALE .0000



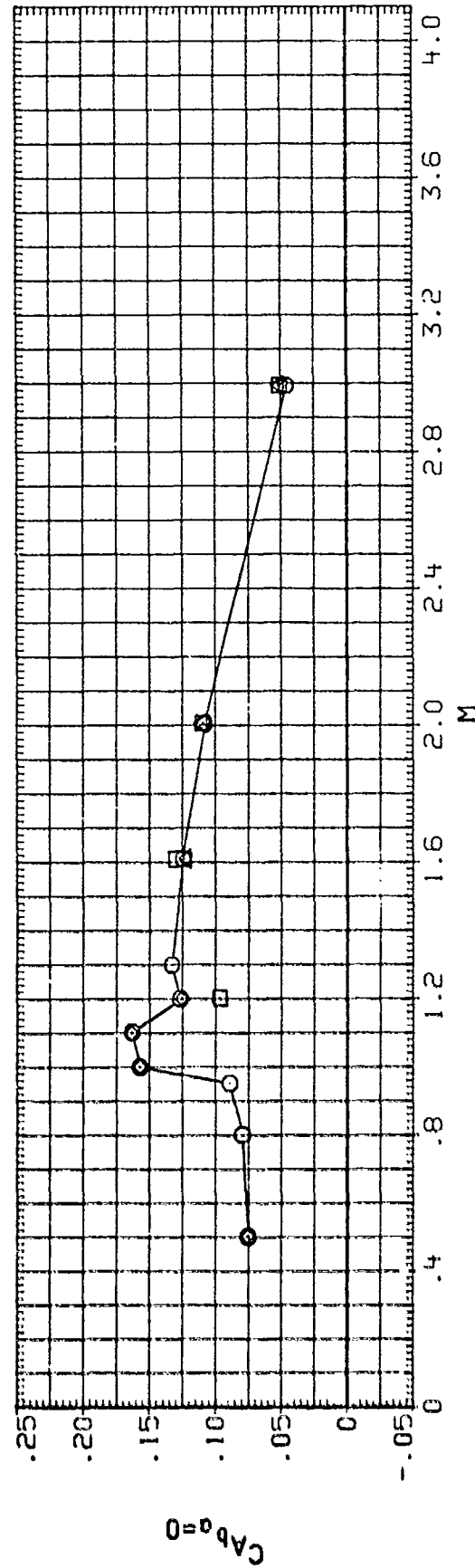
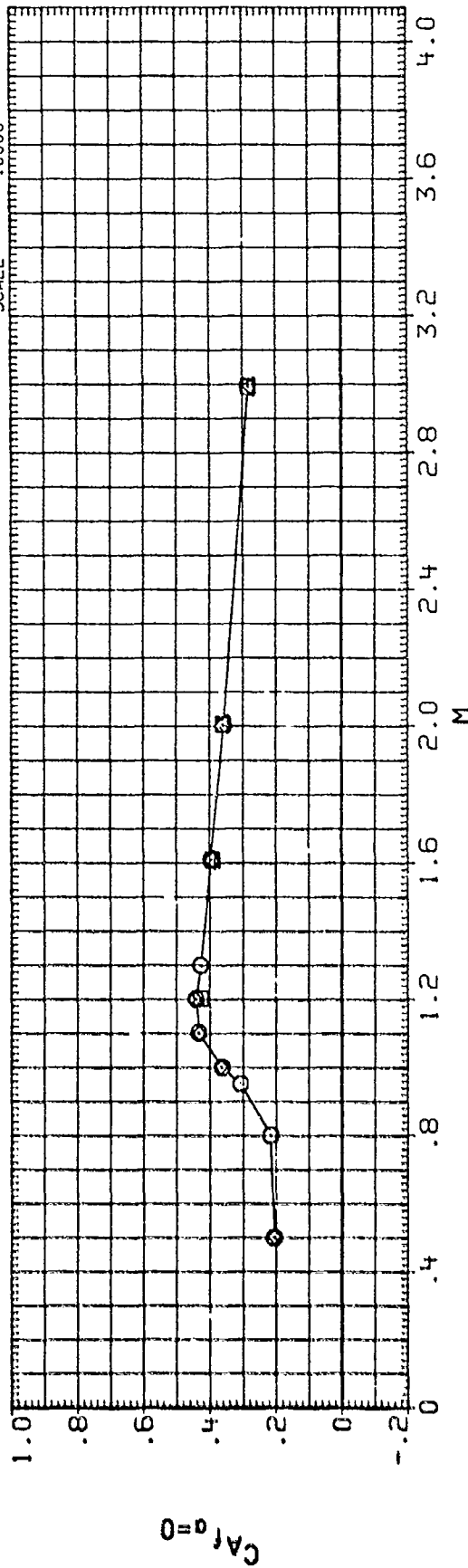
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D	REFERENCE INFORMATION
(DYES17)	□	AEDC-TC-202, WAF FIN STUDY, B3F16	.000	1.000	20.050	.665	12.5660 SQ. IN.
(DXS332)	□	MDAC S-255 XRAPAROUND FIN, B3F16	22.500	1.000	20.050	.665	4.0000 INCHES
(CIES18)	◇	AEDC-TC-202, WAF FIN STUDY, B3F16	45.000	1.000	20.050	.665	4.0000 INCHES
(DXS339)	△	MDAC S-255 XRAPAROUND FIN, B3F16					.0000 INCHES
							ZMRP .0000
							SCALE .0000



DATA SET SYMBOL CONFIGURATION DESCRIPTION
(DT5317) O AEDC-TC-202, WAF FIN STUDY, B3F16
(DX5539) □ MQAC S-255 WRAPAROUND FIN, B3F16
(CT5318) △ AEDC-TC-202, WAF FIN STUDY, B3F16
(DX5539) △ MQAC S-255 WRAPAROUND FIN, B3F16

PHI C/D LAMBDA B/2D
.000 1.000 20.050 .665
22.500 1.000 20.050 .665
45.000 1.000 20.050 .665

REFERENCE INFORMATION
SREF 12.5660 SQ. IN.
LREF 4.0000 INCHES
BREF 4.0000 INCHES
XMRP .0000 INCHES
YMRP .0000 INCHES
ZMRP .0000 INCHES
SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B3F16

DATA SET SYMBOL CONFIGURATION DESCRIPTION

018317: 0 AEDC-TC-202, WAF FIN STUDY, B3F16

1E1EC17: 0 AEDC TC 202, B3F16, ROLLING MOMENT DUE TO FIN

10X5231: 0 WAC S-255 W22AB20000 FIN B3F16

10X5C23: 0 WAC S-255, B3F16, ROLLING MOMENT DUE TO FIN

1018318: 0 AEDC-TC-202, WAF FIN STUDY, B3F16

1E1EC18: 0 AEDC TC 202, B3F16, ROLLING MOMENT DUE TO FIN

PHI .000 .000 22.500 22.500 45.000

C/D 1.000 1.000 1.000 1.000 1.000

LAMBDA 20.050 20.050 20.050 20.050 20.050

B/2D .665 .665 .665 .665 .665

REFERENCE INFORMATION

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LREF 4.0000 INCHES

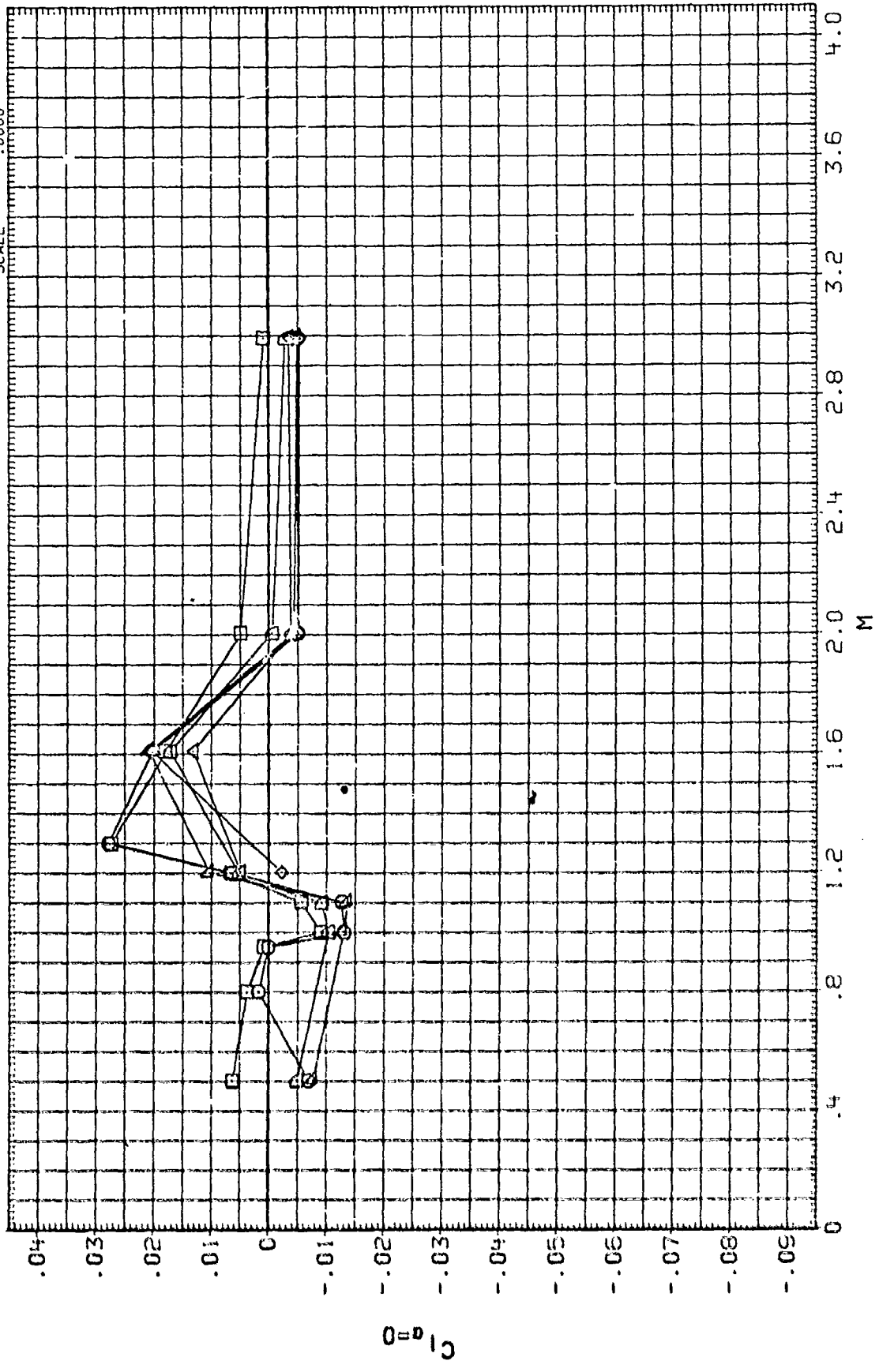
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YMRP .0000 INCHES

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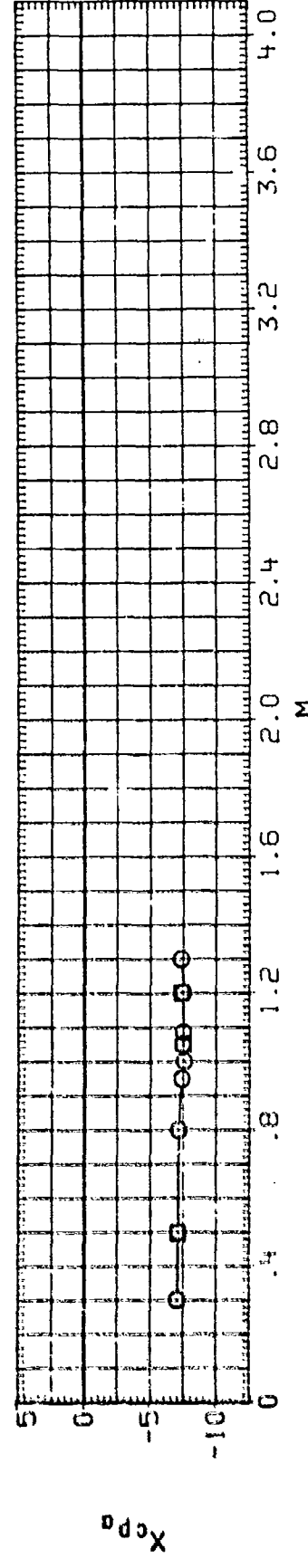
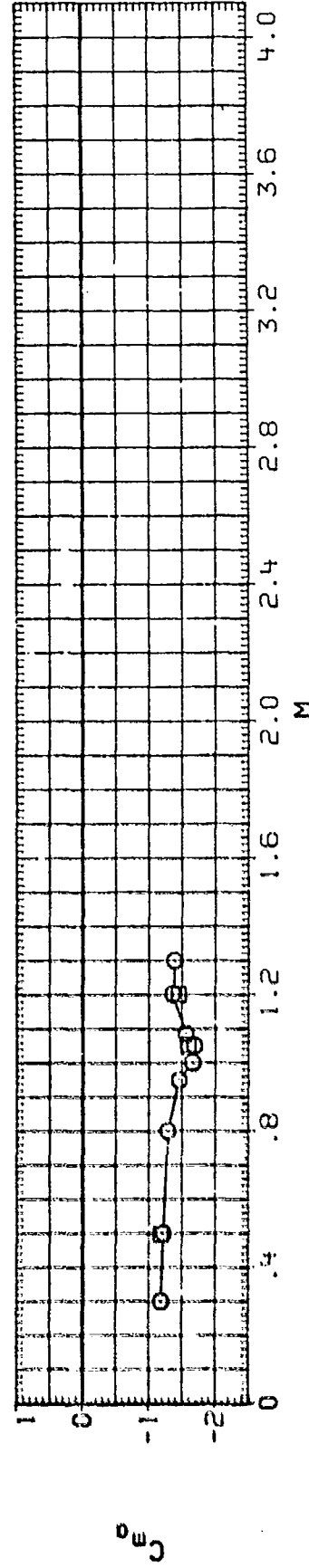
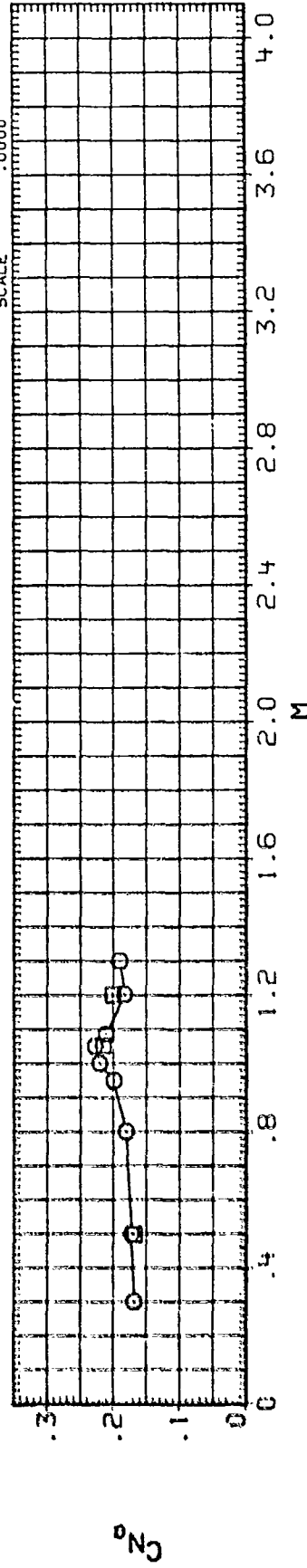
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DATA SET SYMBOL CONFIGURATION DESCRIPTION BIF1
 (C19378) AEDC-T154/170, AFATL FIN STUDY BIF1
 (C19310) AEDC-T154/170, AFATL FIN STUDY BIF1

PHI .000 2600.000
 .000 1100.000

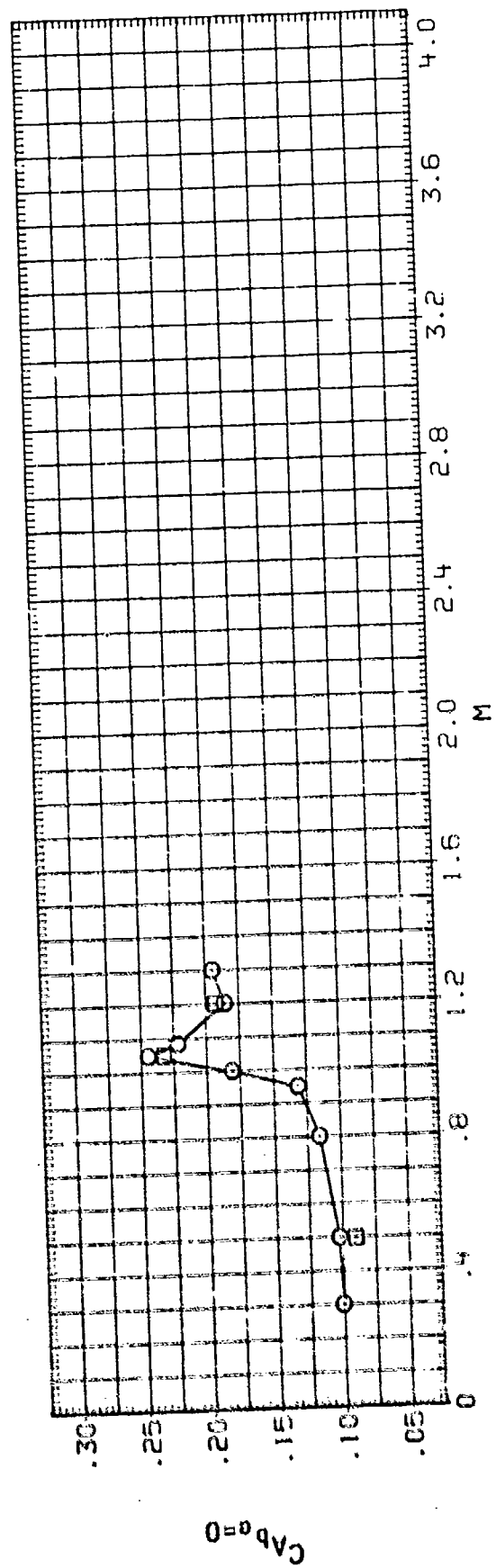
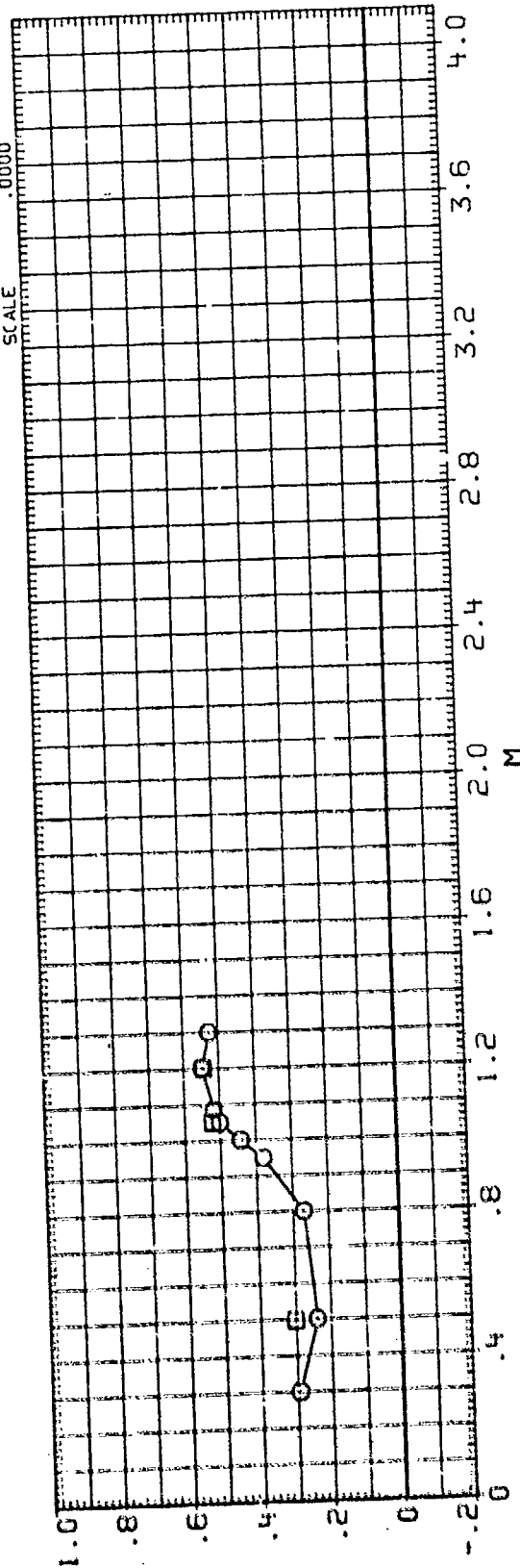
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 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



DATA SET SYMBOL CONFIGURATION DESCRIPTION B1F1
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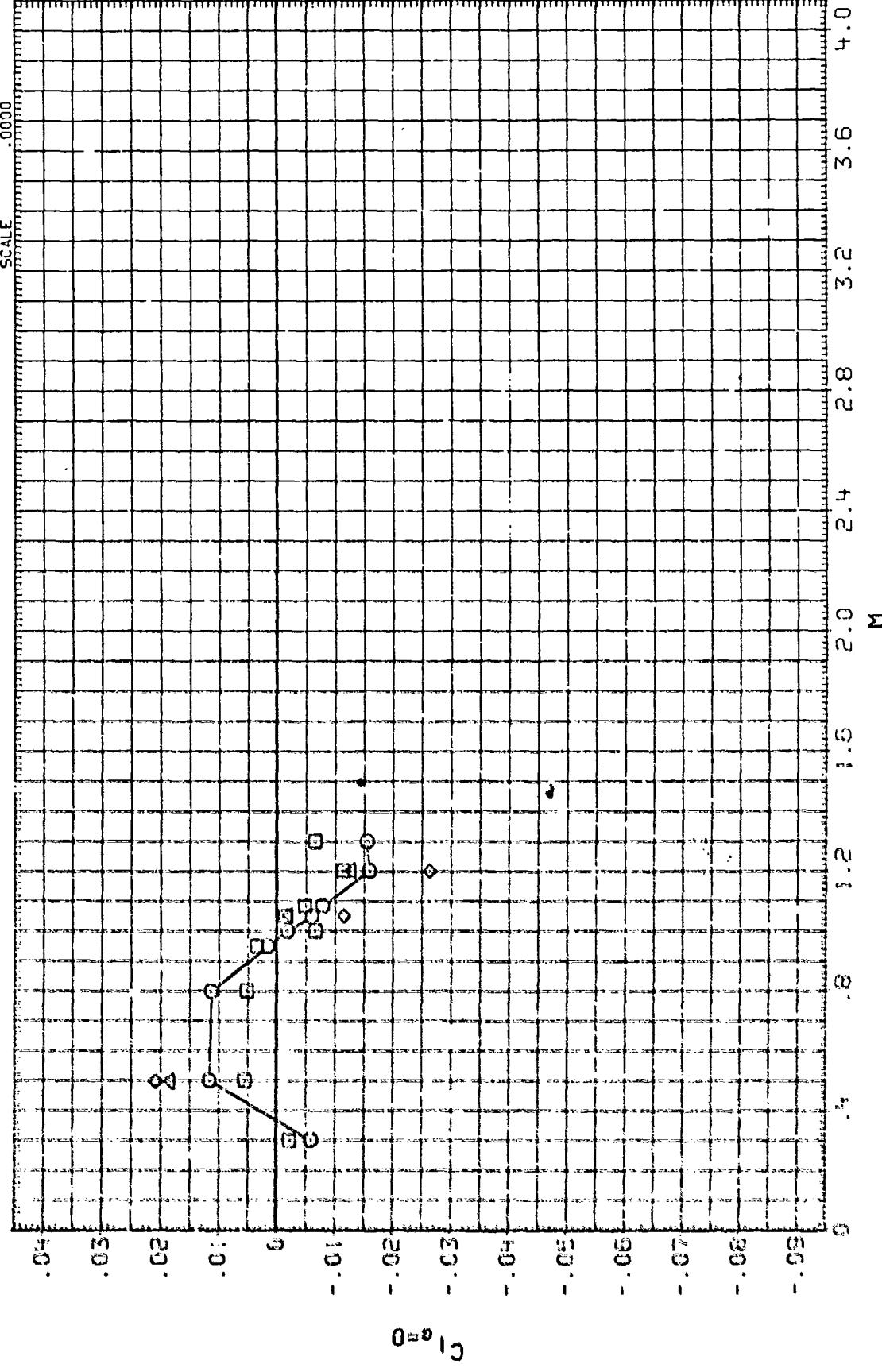
PHI .PTOTL C/D LAMBDA

REFERENCE INFORMATION
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 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	PTOTL	C/D	LAMBDA	REFERENCE INFORMATION
1019531	○	AEDC-TC154-170 AFATL FIN STUDY BIFI	.000	2600.000	1.750	.000	SREF 12.5660 SQ. IN.
1019532	□	AEDC-TC154-170 BIFI. ROLLING MOMENT DUE TO FIN	.000	2600.000	1.750	.000	LREF 4.0000 INCHES
1019533	◇	AEDC-TC154-170 AFATL FIN STUDY BIFI	.000	1.00.000	1.750	.000	BREF 4.0000 INCHES
1019534	△	AEDC-TC154-170 BIFI. ROLLING MOMENT DUE TO FIN	.000	1100.000	1.750	.000	XMRP .0000 INCHES
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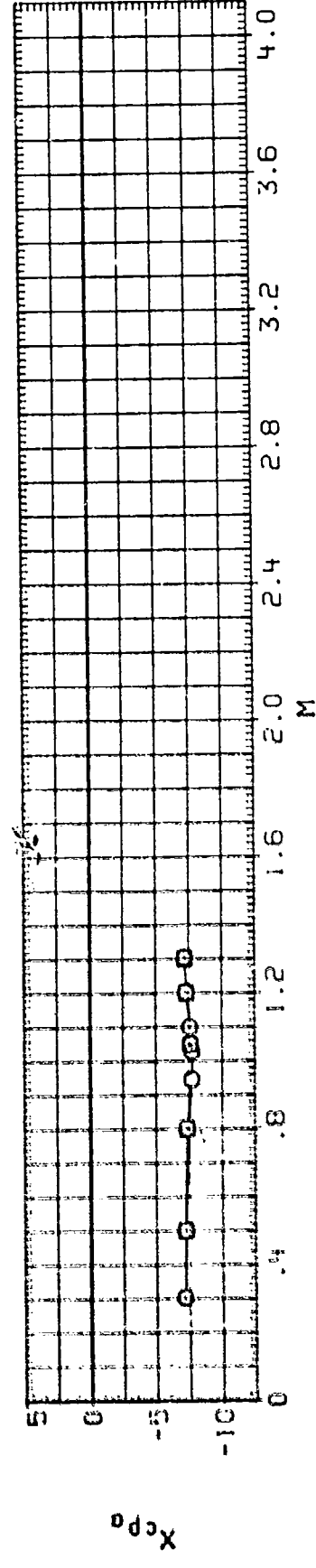
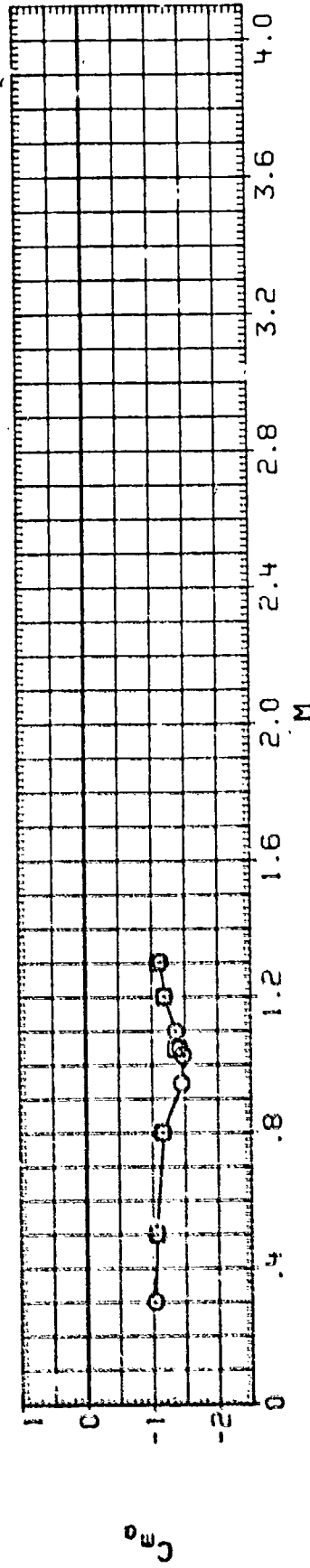
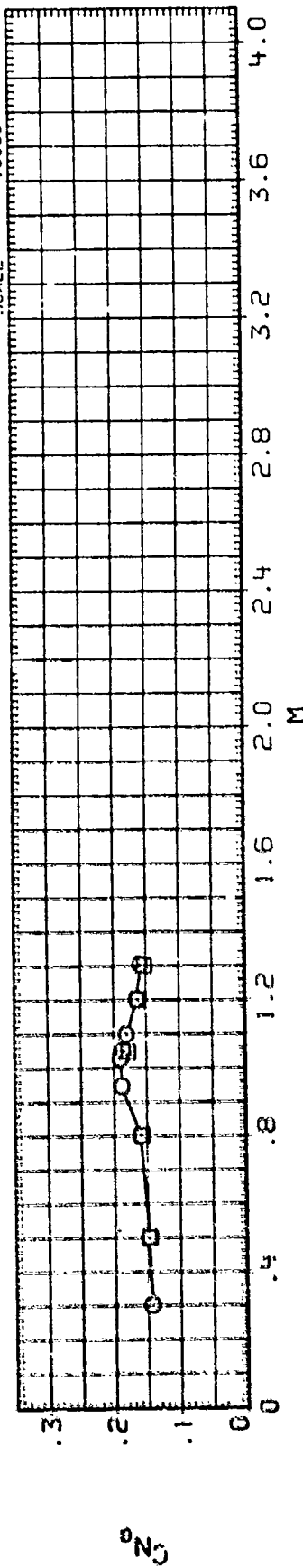


MAIN BALANCE COEFFICIENT SUMMARY, BIFI, REYNOLDS NO. EFFECTS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (C19317) ☐ A50C-1015W/170.AFAFL FIN STUDY B1F2
 (D19332) ☐ A50C-1015W/170.AFAFL FIN STUDY B1F2

PHI PTOTL C/D LAMBDA
 .000 2000.000
 .000 2600.000

REFERENCE INFORMATION
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 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
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 SCALE .0000



DATA SET SYSOL
(C19817)
(1019992)

CONFIGURATION DESCRIPTION

AEDC-1C154/170.AFATL FIN STUDY B1F2
AEDC-1C154/170.AFATL FIN STUDY B1F2

PHI

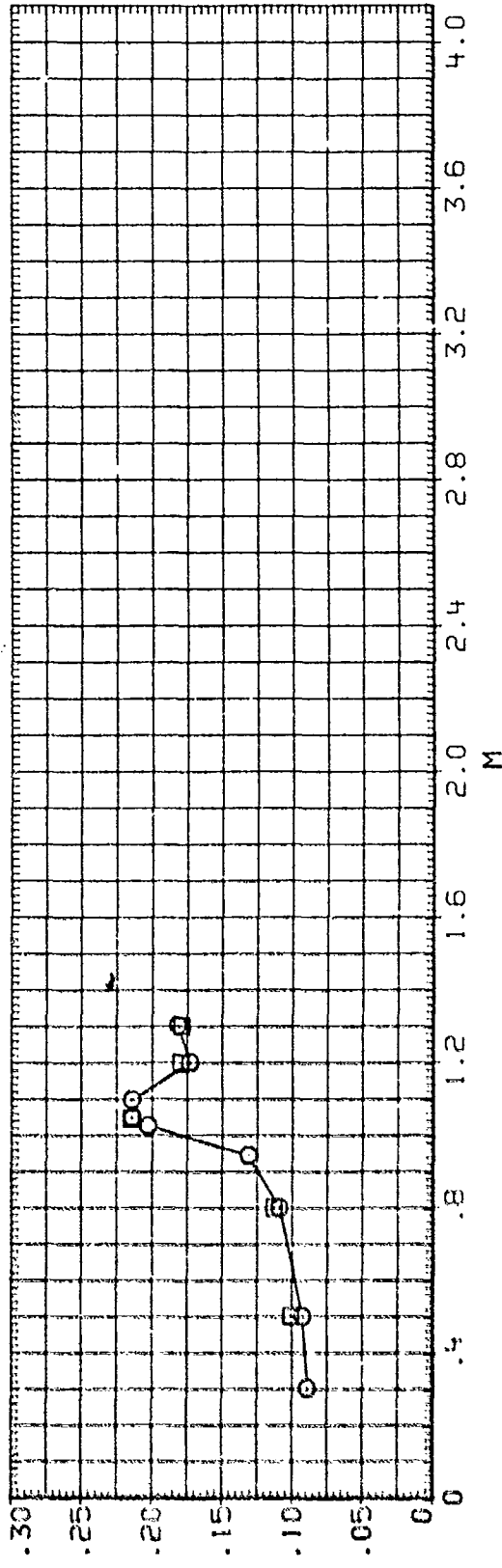
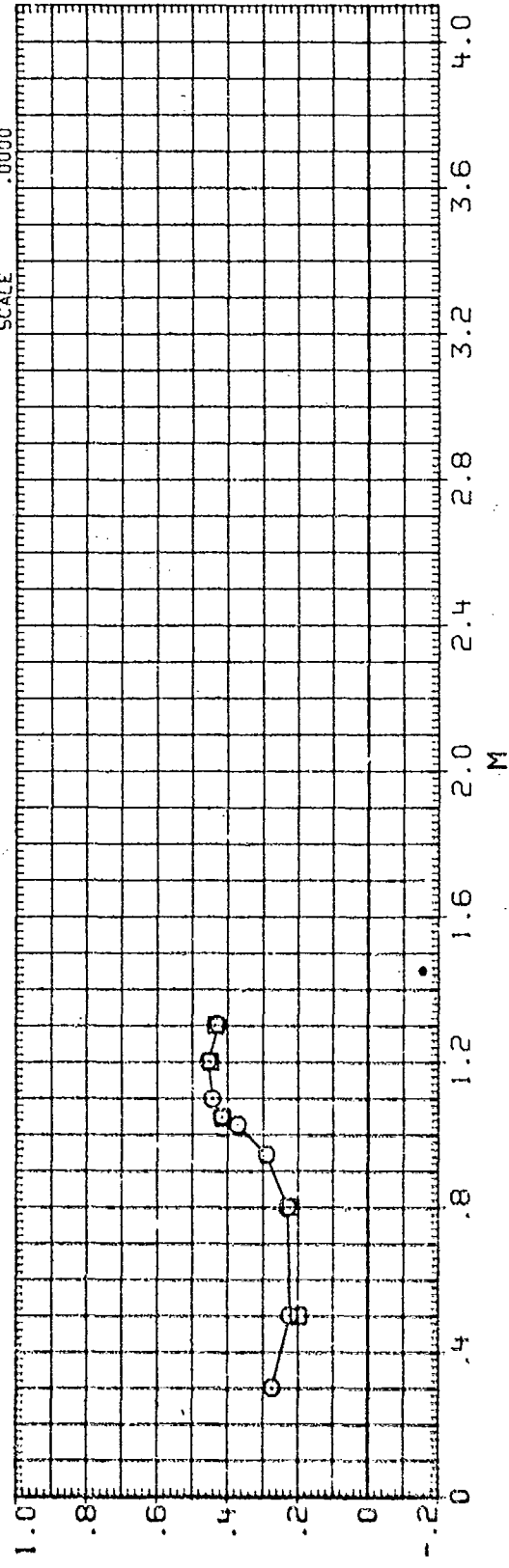
PTOTL

C/D

LAMBDA

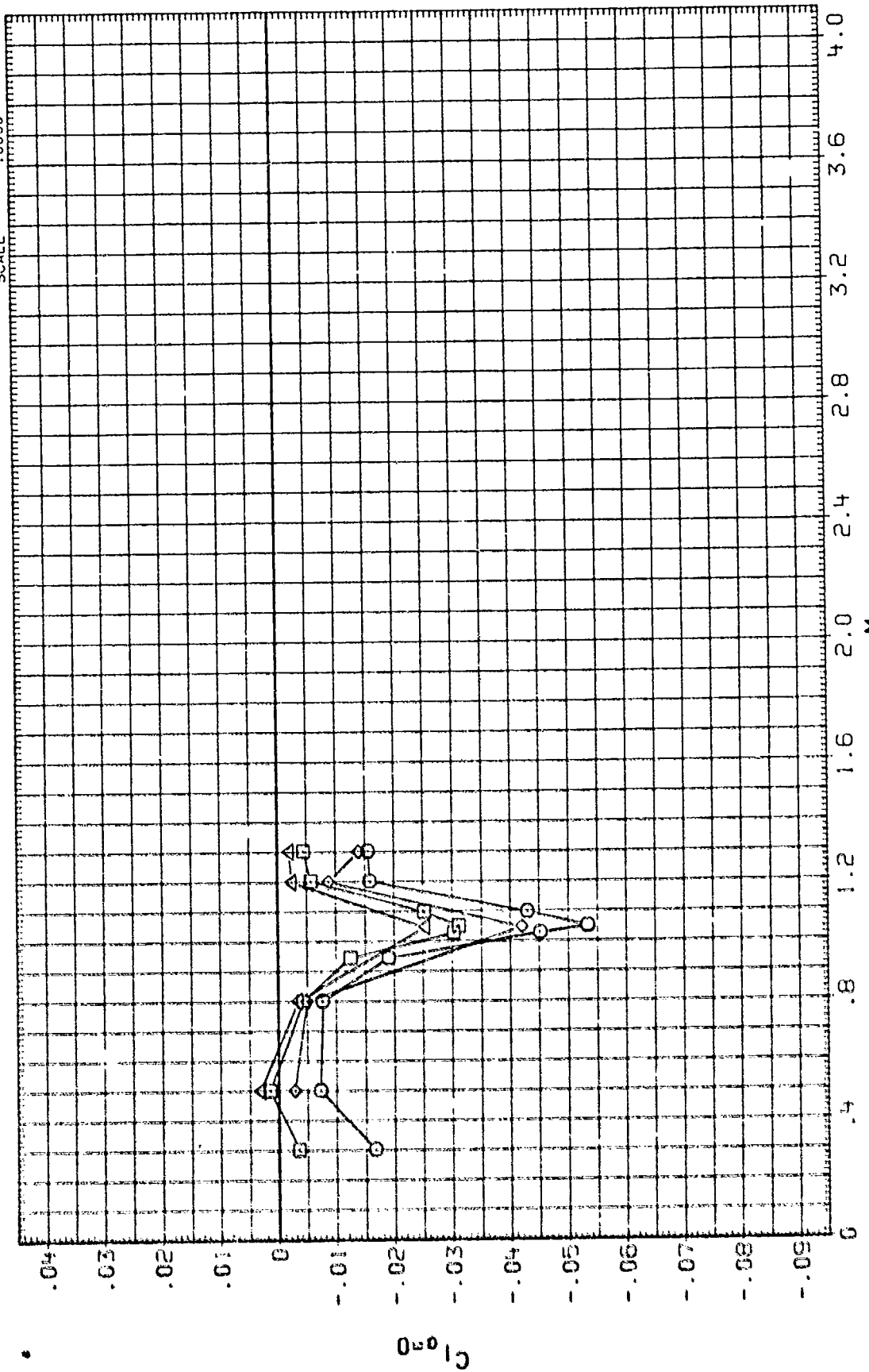
REFERENCE INFORMATION

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LREF 4.0000 INCHES
BREF 4.0000 INCHES
XMRP .0000 INCHES
YMRP .0000 INCHES
ZMRP .0000 INCHES
SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B1F2, REYNOLDS NO. EFFECTS

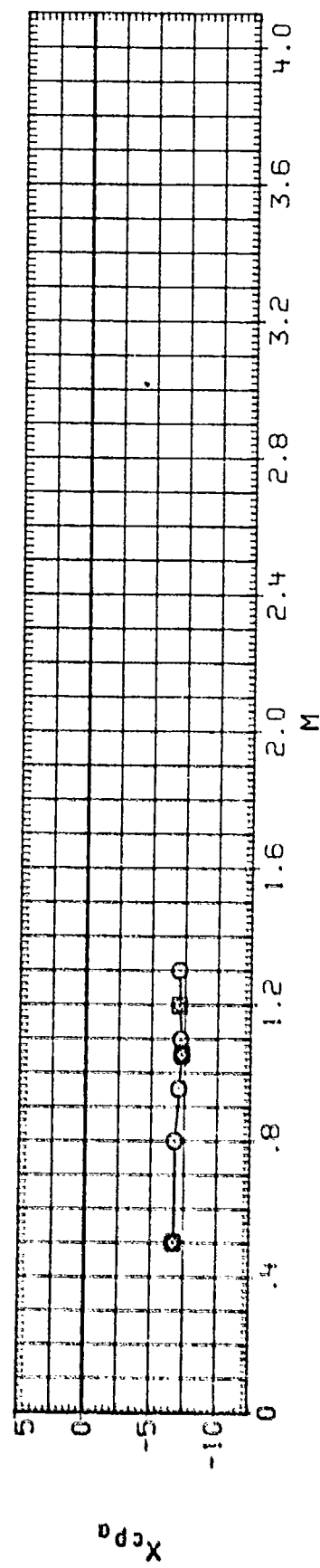
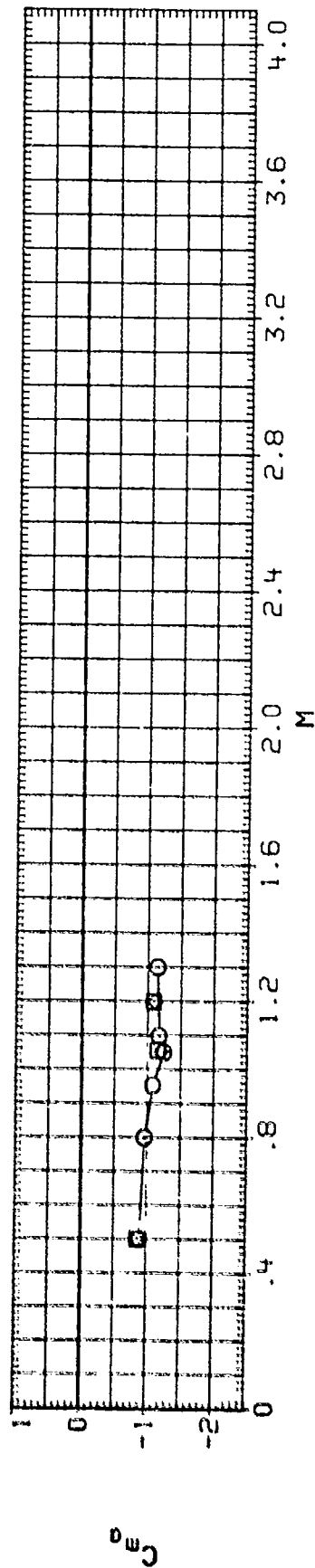
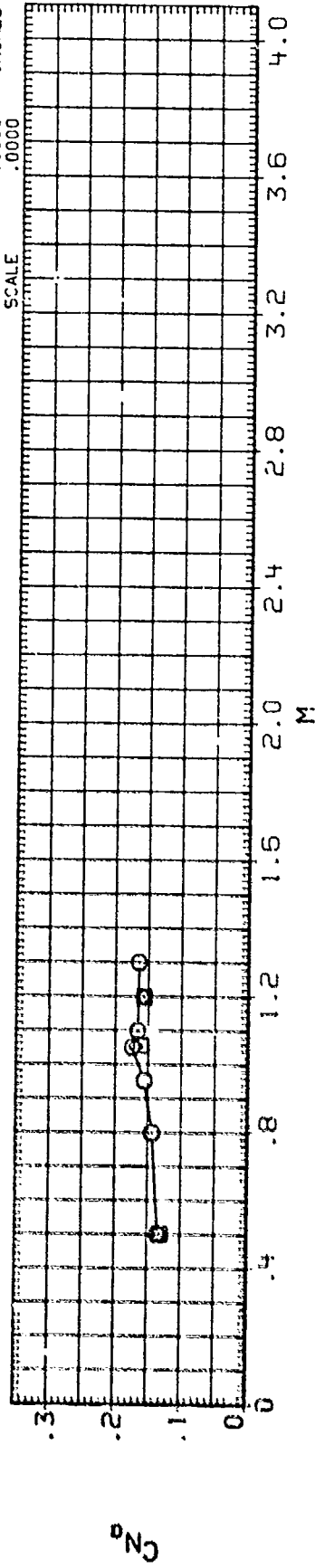
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	PTOTL	C/D	LAMBDA	REFERENCE INFORMATION
10192171	○	AEDC-TC154/170 AFATL FIN STUDY B1F2	.000	2000.000	1.000	.000	SREF 12.5660 SQ. IN.
10192172	□	AEDC-TC 154/170 B1F2. ROLLING MOMENT DUE TO FIN	.000	2000.000	1.000	.000	LREF 4.0000 INCHES
10192173	△	AEDC-TC154/170 AFATL FIN STUDY B1F2	.000	2600.000	1.000	.000	BREF 4.0000 INCHES
10192174	△	AEDC-TC 154/170 B1F2. ROLLING MOMENT DUE TO FIN	.000	2600.000	1.000	.000	XMPP .0000 INCHES
10192175	△	AEDC-TC 154/170 B1F2. ROLLING MOMENT DUE TO FIN	.000	2600.000	1.000	.000	YMPP .0000 INCHES
10192176	△	AEDC-TC 154/170 B1F2. ROLLING MOMENT DUE TO FIN	.000	2600.000	1.000	.000	ZMPP .0000 INCHES



MAIN BALANCE COEFFICIENT SUMMARY, B1F2, REYNOLDS NO. EFFECTS

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 IC15331 AEDC-TC154/173, AFATL FIN STUDY BIF10
 IC15341 AEDC-TC154/173, AFATL FIN STUDY BIF10
 IC15343 AEDC-TC154/173, AFATL FIN STUDY BIF10

PHI PTOTL C/D LAMBOA REFERENCE INFORMATION
 .000 2600.000 1.750 12.5660 SQ. IN.
 .000 1800.000 1.750 4.0000 INCHES
 .000 1100.000 1.750 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000

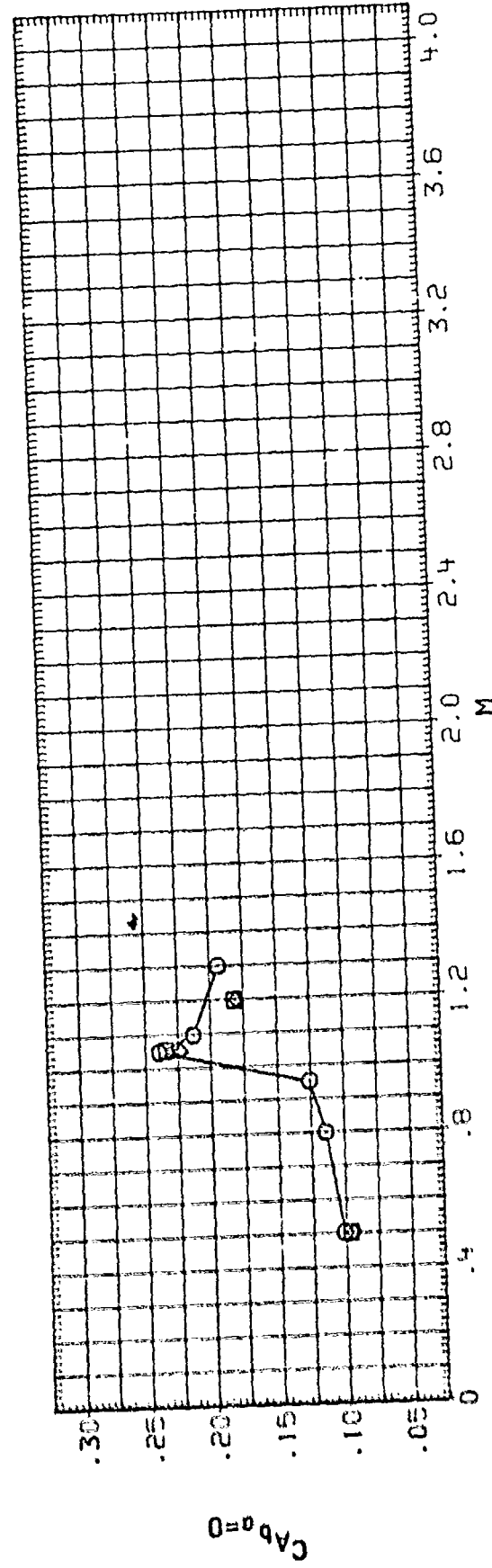
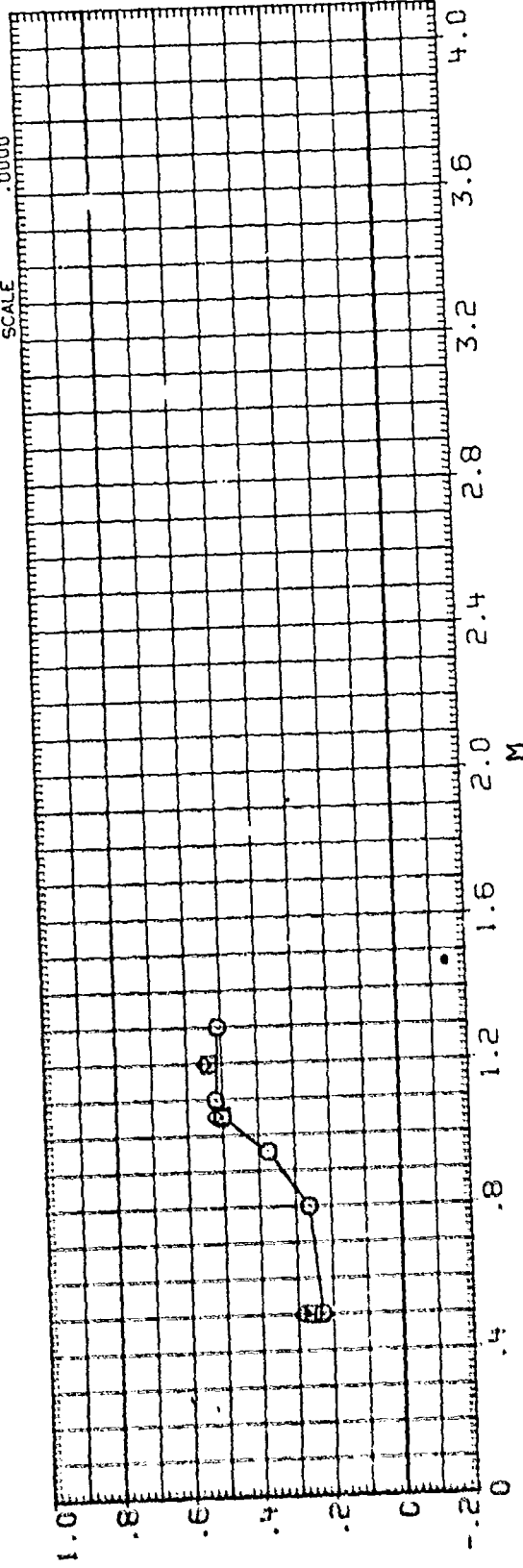


MAIN BALANCE COEFFICIENT SUMMARY, BIF10, REYNOLDS NO. EFFECTS

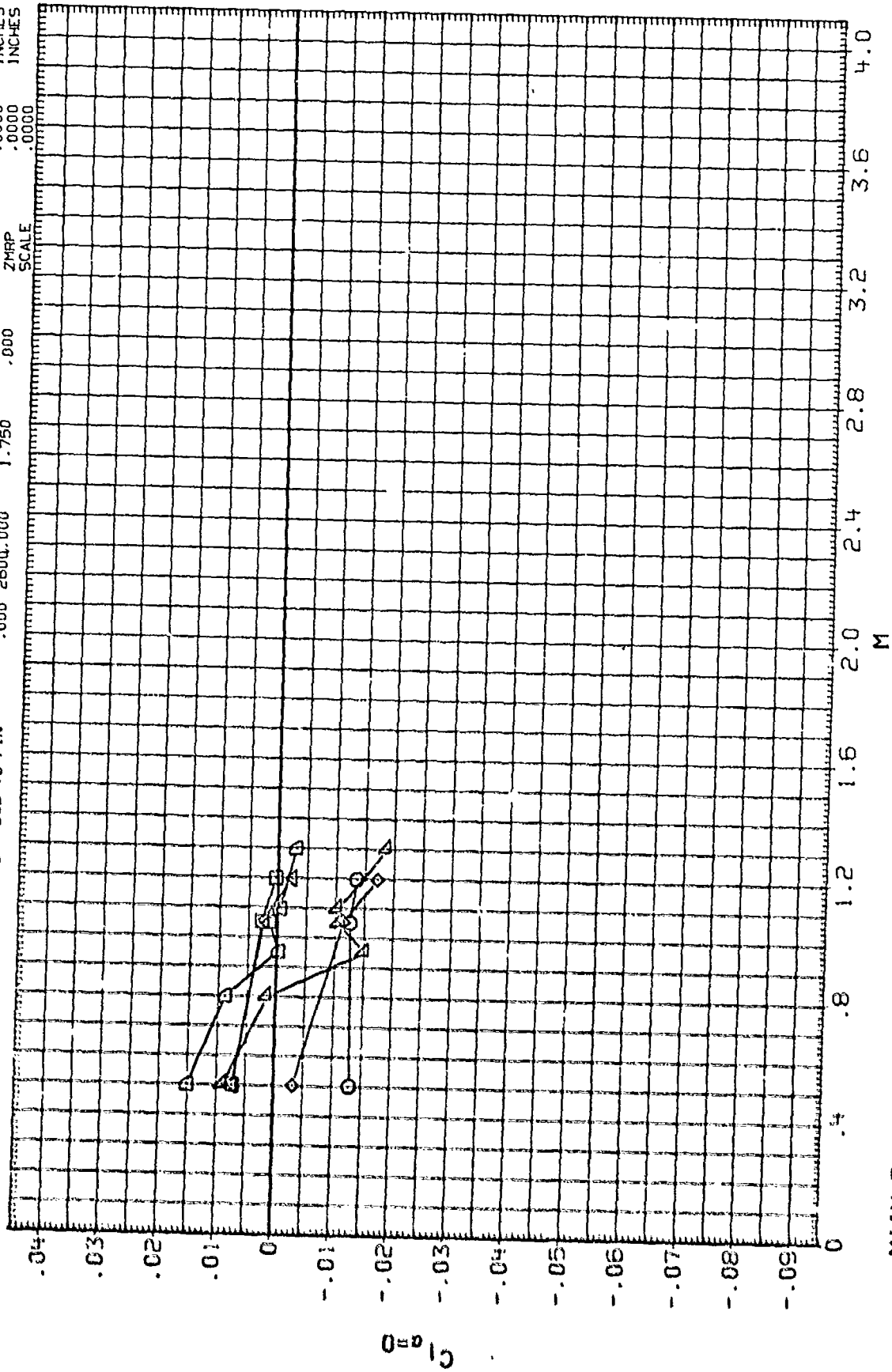
DATA SET SYMBOL CONFIGURATION DESCRIPTION BIF10
 (C15531) AEDC-TC154/170-AFATL FIN STUDY BIF10
 (C15531) AEDC-TC154/170-AFATL FIN STUDY BIF10
 (C15531) AEDC-TC154/170-AFATL FIN STUDY BIF10

PHI PTOTL C/D LAMDA

REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 LREF 4.0000 INCHES
 BREF 4.0000 INCHES
 XMRP .0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	PTOTL	C/D	LAMBDA	REFERENCE INFORMATION
(C)SE43	□	AEDC-IC154/170.AFATL FIN STUDY BIF10	.000	1100.000	1.750	.000	SREF 12.5660 SO.IN.
(D)SC43	◇	AEDC IC 154/170 BIF10. ROLLING MOMENT DUE TO FIN	.000	1100.000	1.750	.000	LREF 4.0000 INCHES
(C)SE41	△	AEDC-IC154/170.AFATL FIN STUDY BIF10	.000	1800.000	1.750	.000	BREF 4.0000 INCHES
(D)SC41	△	AEDC IC 154/170 BIF10. ROLLING MOMENT DUE TO FIN	.000	1800.000	1.750	.000	YMRP .0000 INCHES
(C)SE39	△	AEDC-IC154/170.AFATL FIN STUDY BIF10	.000	2600.000	1.750	.000	ZMRP .0000 INCHES
(D)SC39	△	AEDC IC 154/170 BIF10. ROLLING MOMENT DUE TO FIN	.000	2600.000	1.750	.000	SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, BIF10, REYNOLDS NO. EFFECTS

DATA SET SYMBOL CONFIGURATION DESCRIPTION

1C19B741 AEDC-TC154/170.AFATL FIN STUDY B2F1

1C19B761 AEDC-TC154/170.AFATL FIN STUDY B2F1

1C19B781 AEDC-TC154/170.AFATL FIN STUDY B2F1

PHI PTOTL C/D LAMBDA

.000 2600.000 1.750 .000

.000 1800.000 1.750 .000

.000 1100.000 1.750 .000

REFERENCE INFORMATION

SREF 12.5660 SQ. IN.

LREF 4.0000 INCHES

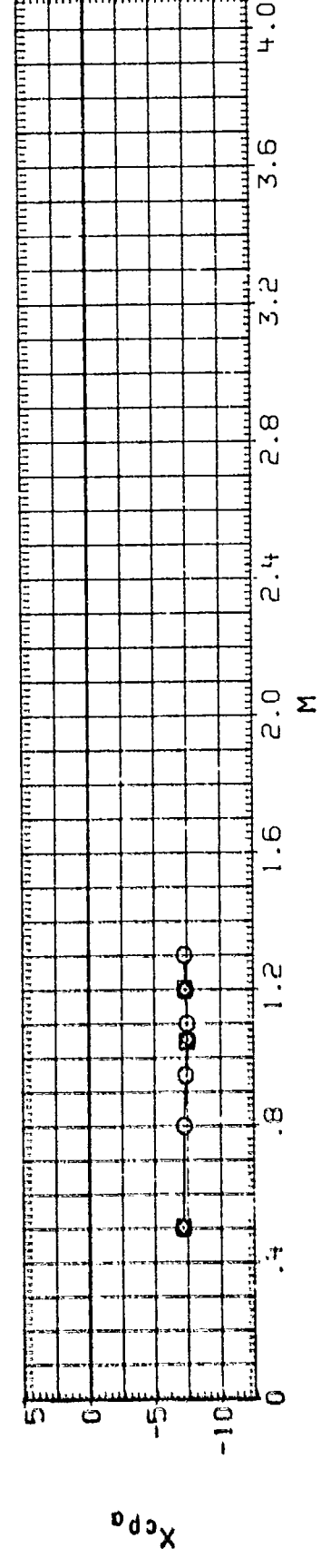
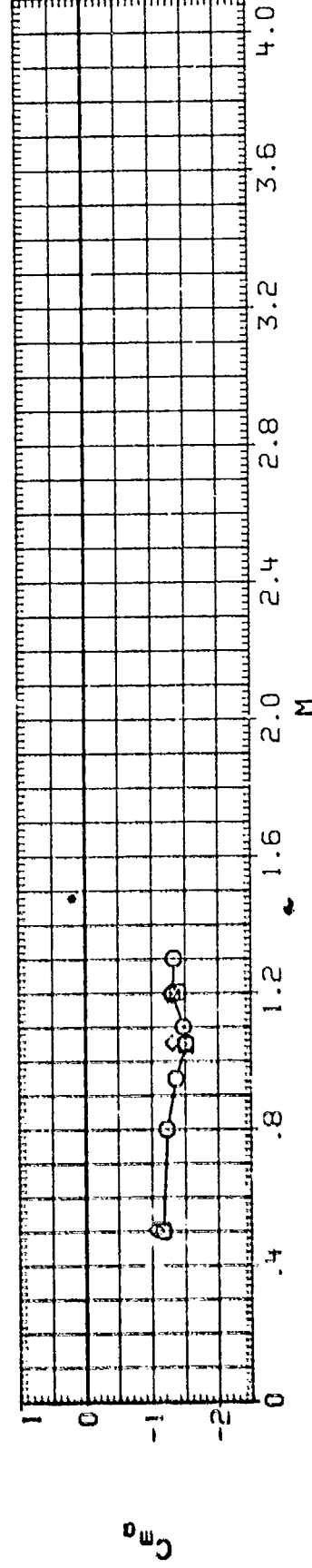
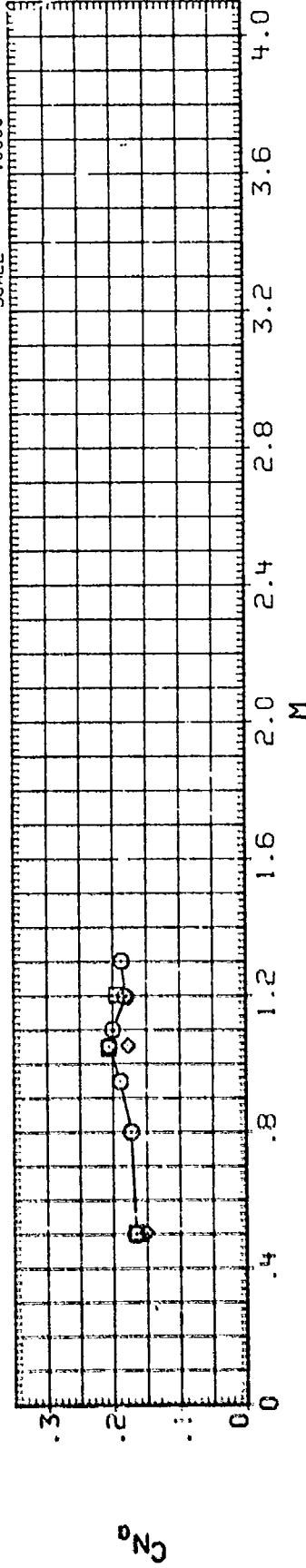
BREF 4.0000 INCHES

XMRP .0000 INCHES

YMRP .0000 INCHES

ZMRP .0000 INCHES

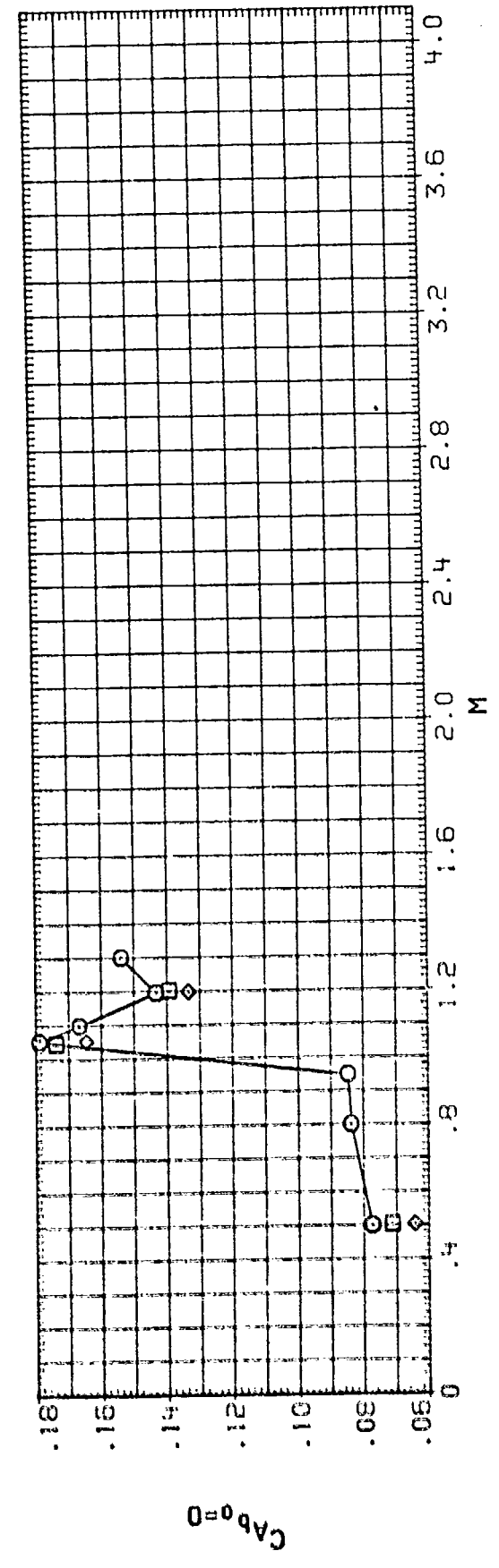
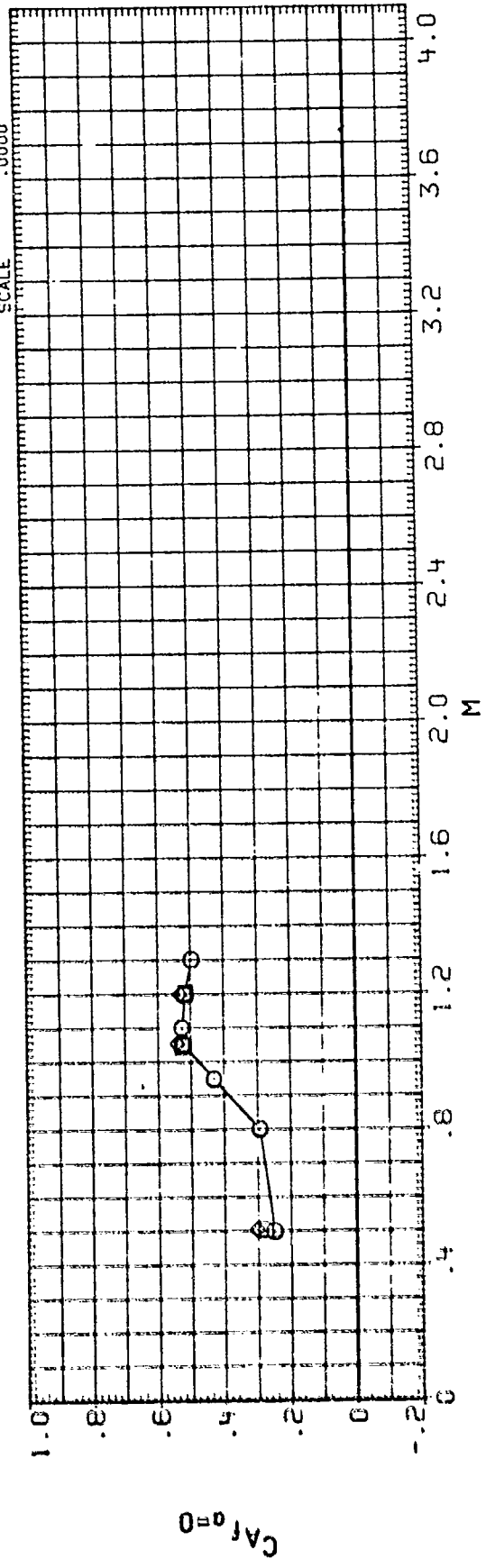
SCALE .0000



DATA SET SYMBOL CONFIGURATION DESCRIPTION
(C1987-1) C AEDC-TC154/170.AFATL FIN STUDY B2F1
(C1987-2) C AEDC-TC154/170.AFATL FIN STUDY B2F1
(C1987-3) D AEDC-TC154/170.AFATL FIN STUDY B2F1

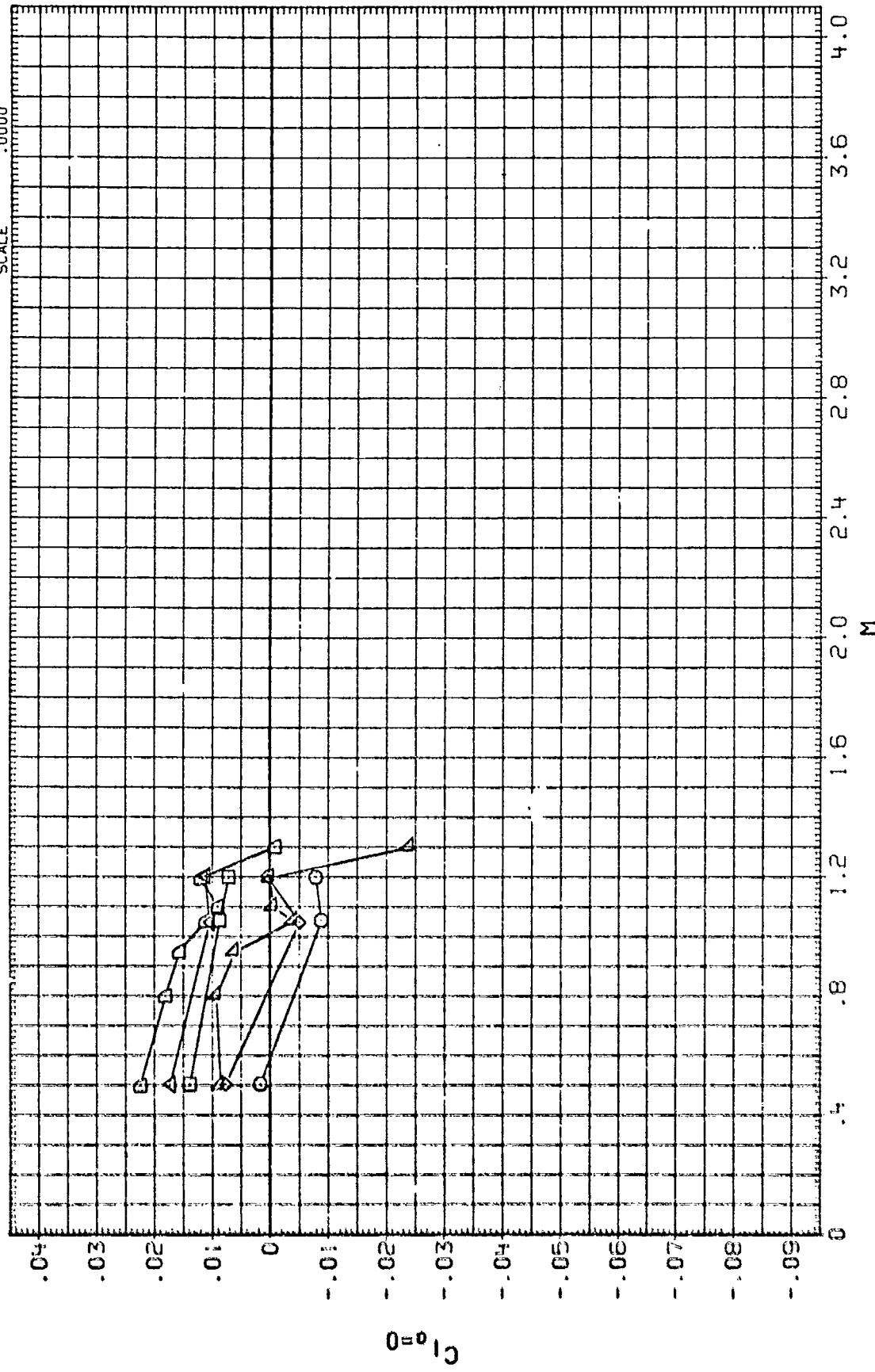
PHI PTOTL C/D LAMBOA
.000 2600.000 1.750 .000
.000 1800.000 1.750 .000
.000 1100.000 1.750 .000

REFERENCE INFORMATION
SREF 12.5660 SO. IN.
LREF 4.0000 INCHES
BREF 4.0000 INCHES
XMRP .0000 INCHES
YMRP .0000 INCHES
ZMRP .0000 INCHES
SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B2F1, REYNOLDS NO. EFFECTS

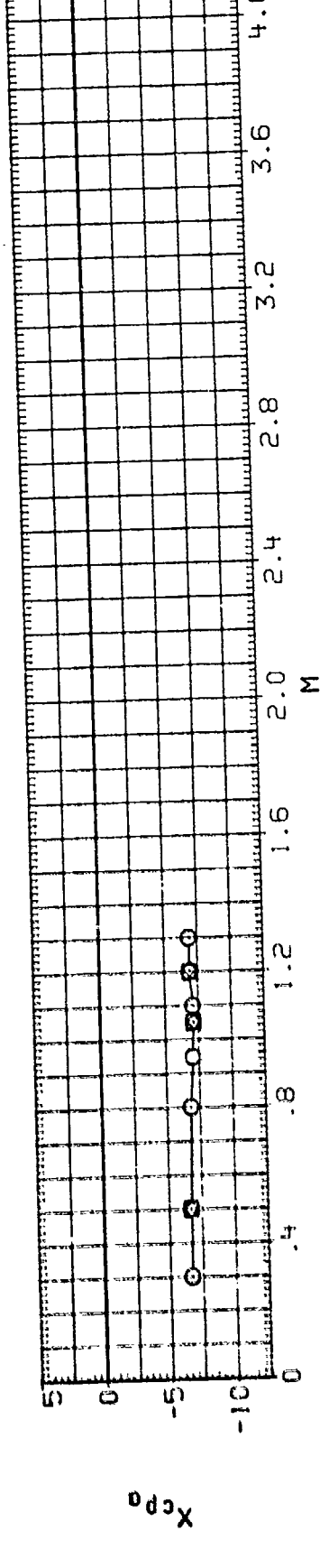
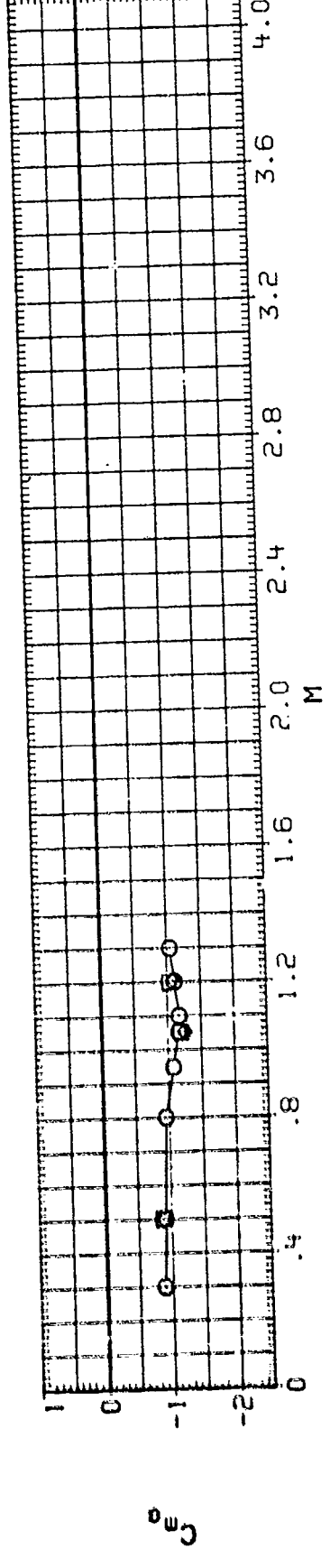
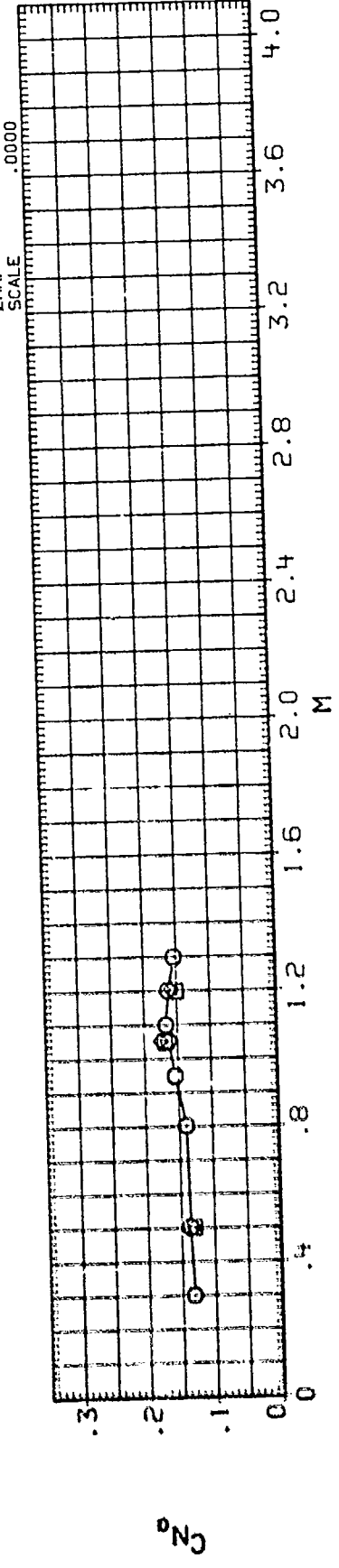
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	PTOTL	C/D	LAMBDA	REFERENCE INFORMATION
(C19878)	○	AEDC-IC154/170.AFATL FIN STUDY B2F1	.000	1100.000	1.750	.000	SREF 12.5660 SQ. IN.
(C19878)	□	AEDC IC 154/170 B2F1, ROLLING MOMENT DUE TO FIN	.000	1100.000	1.750	.000	LREF 4.0000 INCHES
(C19878)	△	AEDC-IC154/170.AFATL FIN STUDY B2F1	.000	1800.000	1.750	.000	BREF 4.0000 INCHES
(C19878)	△	AEDC IC 154/170 B2F1, ROLLING MOMENT DUE TO FIN	.000	1800.000	1.750	.000	XMRP .0000 INCHES
(C19878)	△	AEDC-IC154/170.AFATL FIN STUDY B2F1	.000	2600.000	1.750	.000	YMRP .0000 INCHES
(C19878)	△	AEDC IC 154/170 B2F1, ROLLING MOMENT DUE TO FIN	.000	2600.000	1.750	.000	ZMRP .0000 INCHES
							SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY, B2F1, REYNOLDS NO. EFFECTS

DATA SET: SYMOL CONFIGURATION DESCRIPTION B2F10
 1C19831 AEDC-TC154/170-AFATL FIN STUDY B2F10
 1C19832 AEDC-TC154/170-AFATL FIN STUDY B2F10
 1C19834 AEDC-TC154/170-AFATL FIN STUDY B2F10

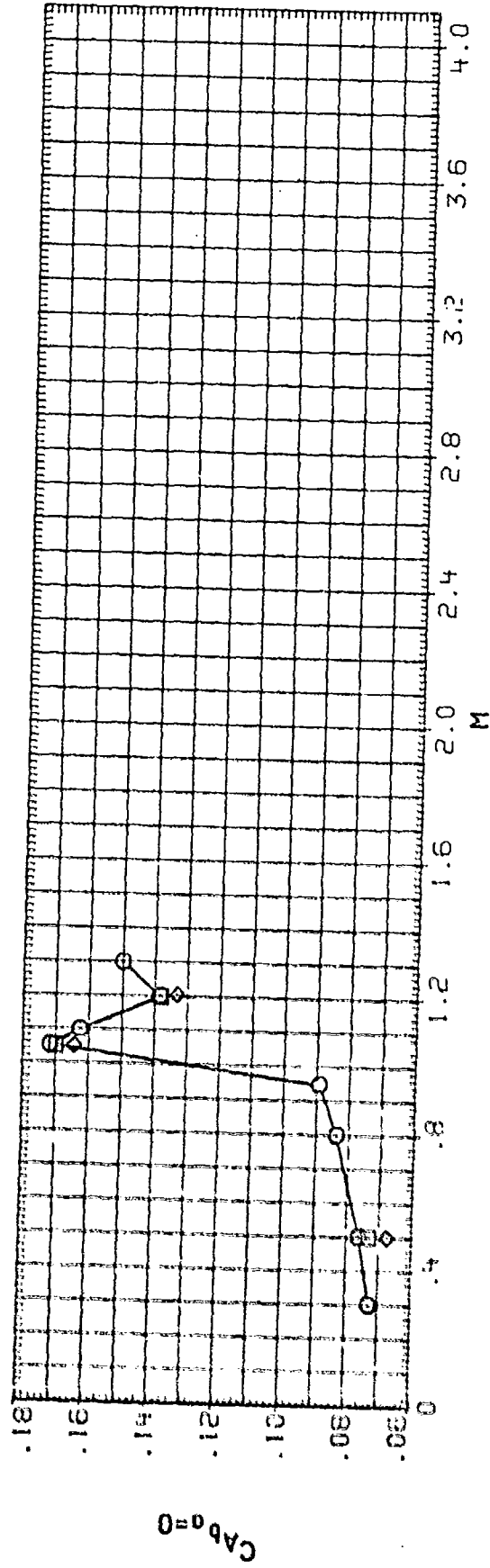
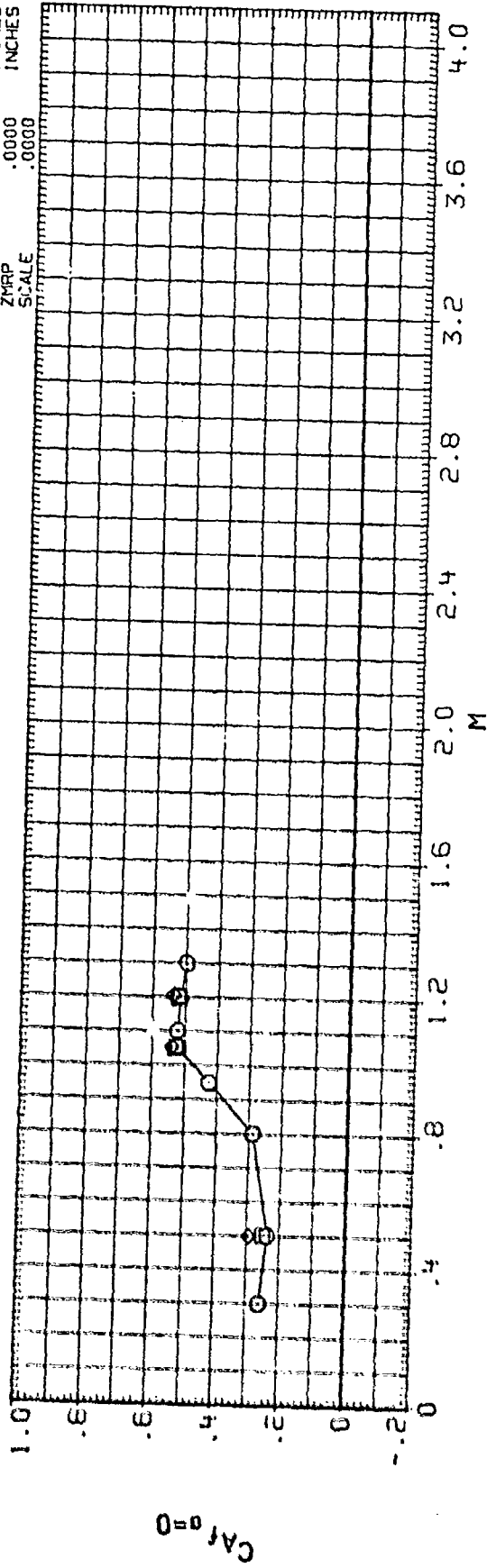
PHI PTOTL C/D LAMBDA SQ. IN.
 .000 2600.000 1.750 .000 12.5660
 .000 1800.000 1.750 .000 4.0000
 .030 1100.000 1.750 .000 4.0000
 .000 .0000 .0000 .0000 .0000
 .0000 .0000 .0000 .0000 .0000



DATA SET: SYMBOL CONFIGURATION DESCRIPTION
 (C19883) O AEDC-TC154/120.4FATL FIN STUDY B2F10
 (C19883) O AEDC-TC154/120.4FATL FIN STUDY B2F10
 (C19883) O AEDC-TC154/120.4FATL FIN STUDY B2F10

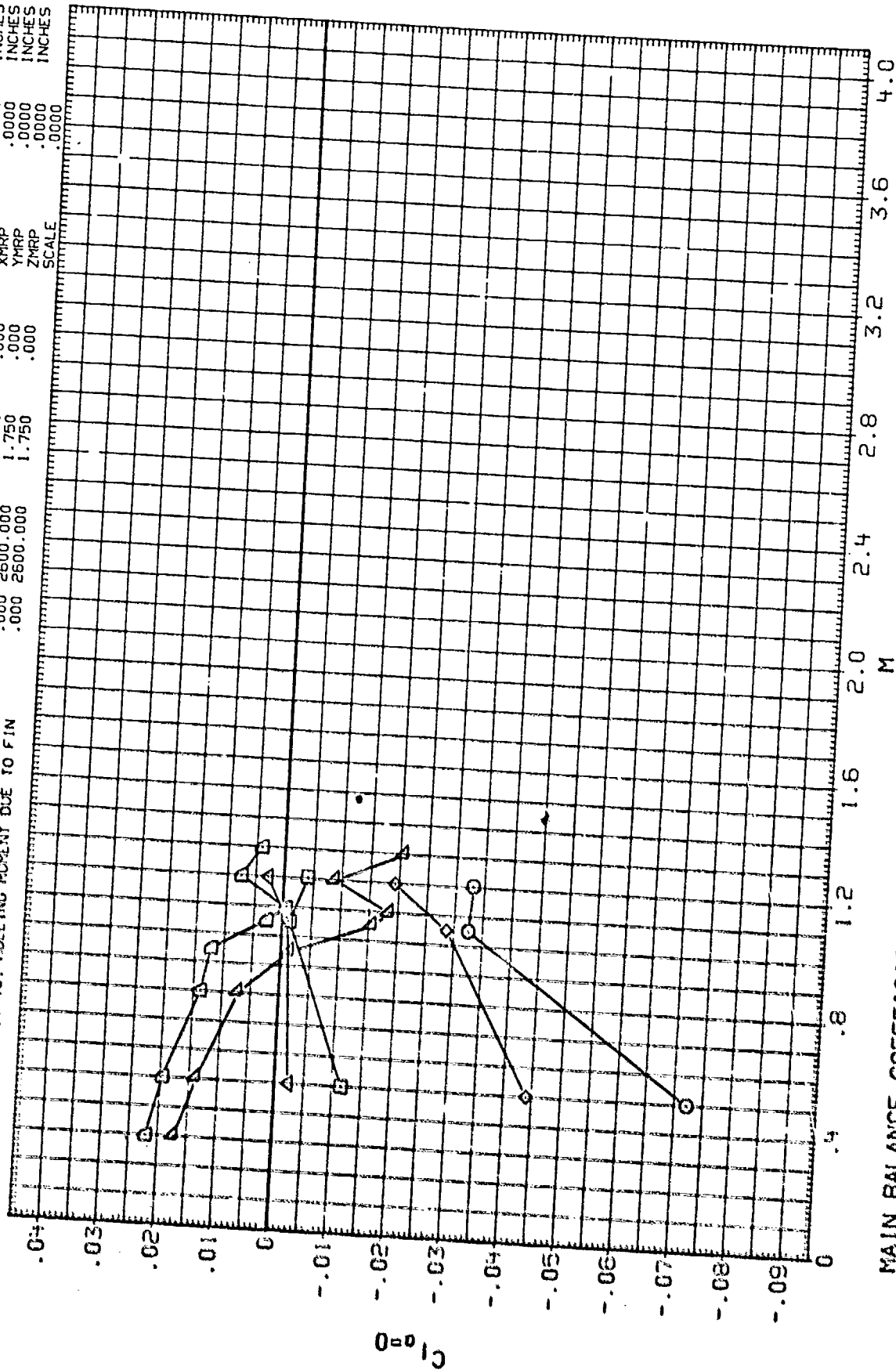
PHI PTOTL C/D LAMBDA
 .000 2600.000 1.750 .000
 .000 1800.000 1.750 .000
 .000 1100.000 1.750 .000

REFERENCE INFORMATION
 SREF 12.5660 SQ. IN.
 LREF 4.0000 INCHES
 BREF 4.0000 INCHES
 YMRP .0000 INCHES
 ZMRP .0000 INCHES
 SCALE .0000 INCHES



MAIN BALANCE COEFFICIENT SUMMARY. B2F10. REYNOLDS NO. EFFECTS

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	PTOTL	C/D	LAMBDA	REFERENCE INFORMATION
IC19884	□	AEDC-TC154/170.AFATL FIN STUDY B2F10	.000	1100.000	1.750	.000	SREF 12.5660 SQ.IN.
IC19884	○	AEDC-TC 154/170 BIF10. ROLLING MOMENT DUE TO FIN	.000	1100.000	1.750	.000	LREF 4.0000 INCHES
IC19882	△	AEDC-TC154/170.AFATL FIN STUDY B2F10	.000	1800.000	1.750	.000	BREF 4.0000 INCHES
IC19882	△	AEDC-TC 154/170 BIF10. ROLLING MOMENT DUE TO FIN	.000	1800.000	1.750	.000	XMRP .0000 INCHES
IC19883	□	AEDC-TC154/170.AFATL FIN STUDY B2F10	.000	2600.000	1.750	.000	ZMRP .0000 INCHES
IC19883	□	AEDC-TC 154/170 BIF10. ROLLING MOMENT DUE TO FIN	.000	2600.000	1.750	.000	SCALE .0000



MAIN BALANCE COEFFICIENT SUMMARY. B2F10, REYNOLDS NO. EFFECTS

PLOTTED DATA APPENDIX B.

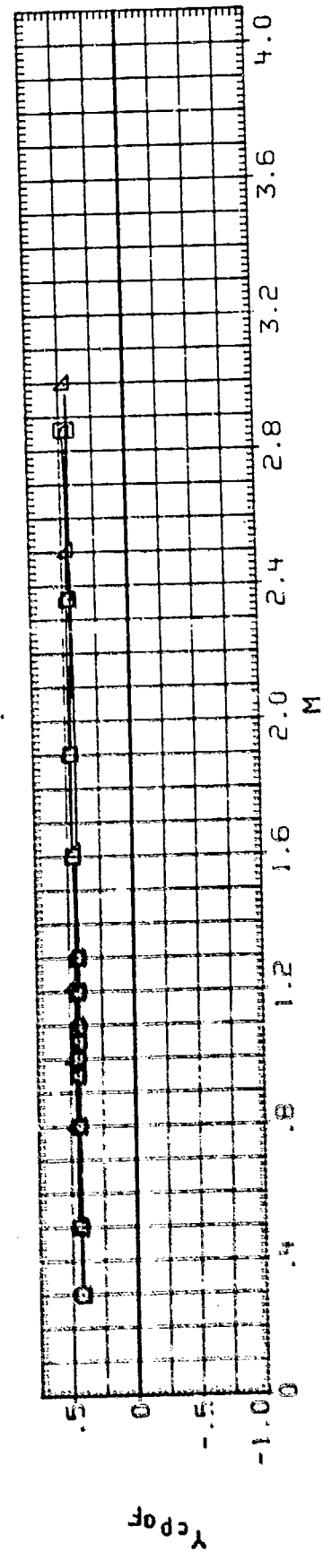
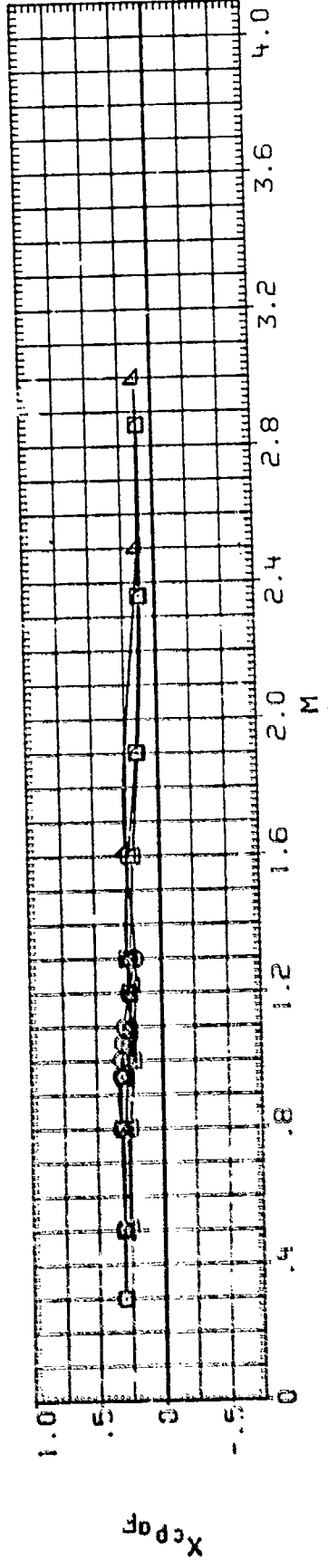
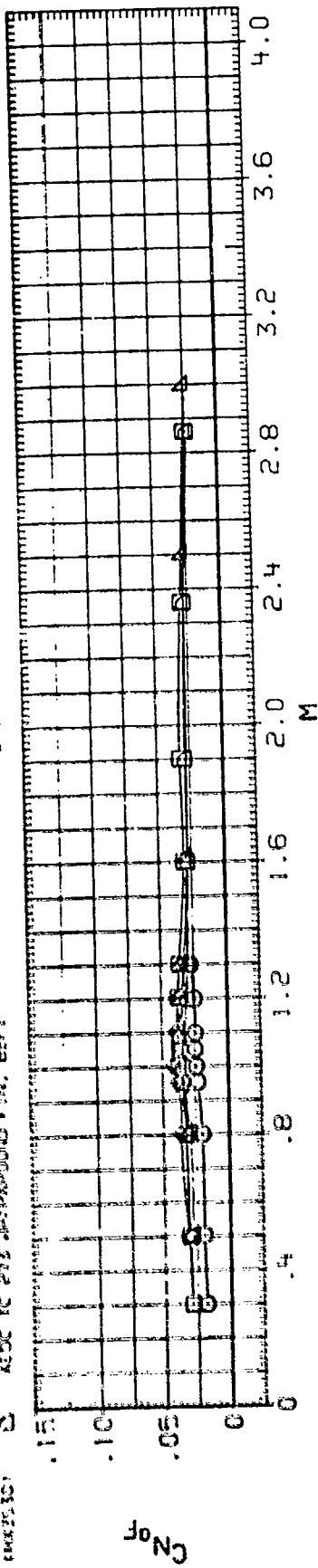
HORIZONTAL FIN PANEL DATA

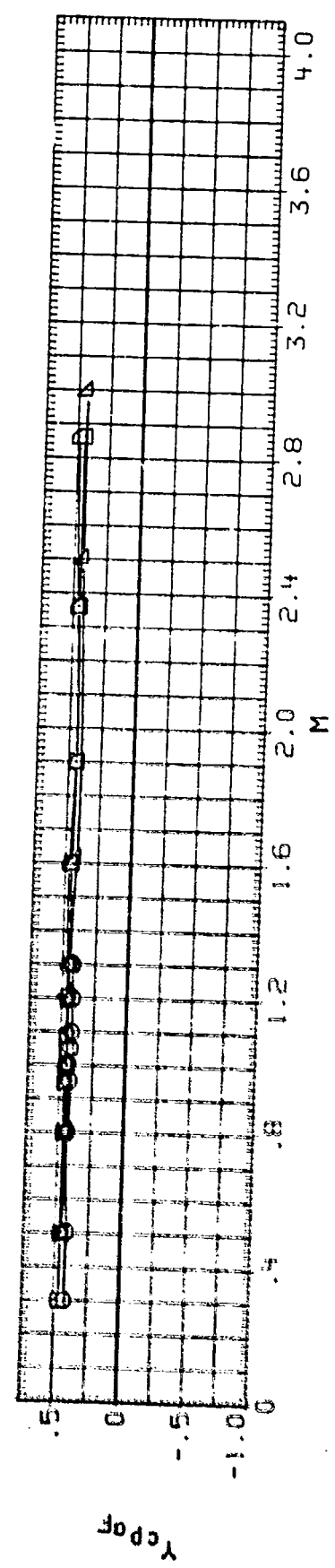
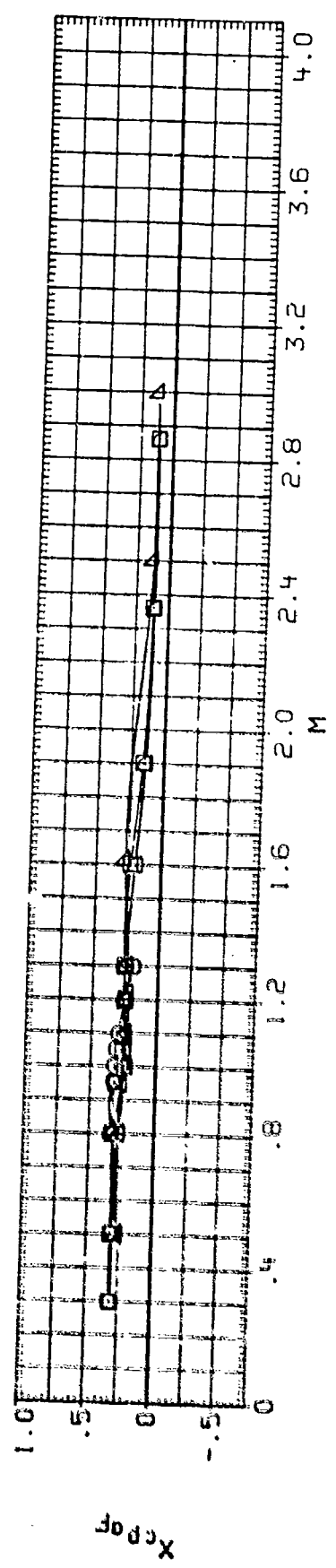
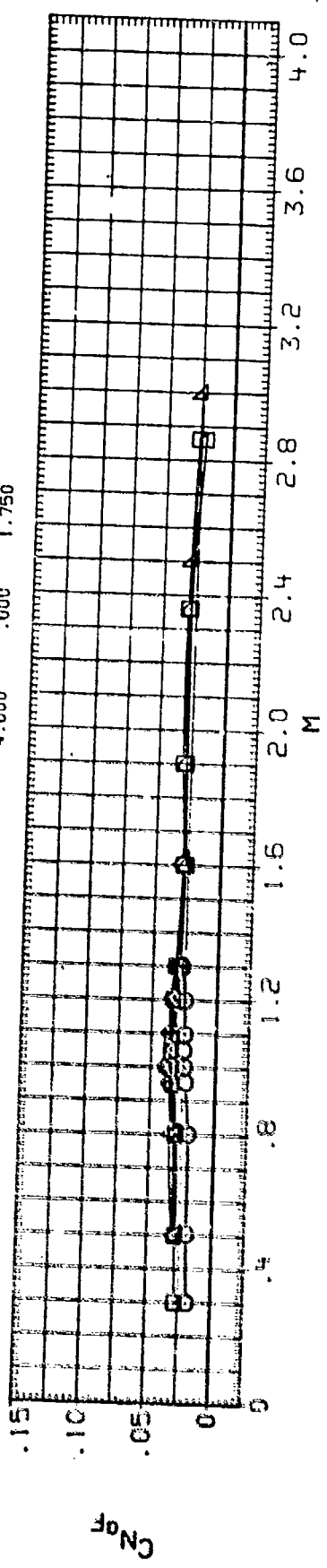
<u>CONFIGURATION</u>	<u>PAGE</u>
F1	1-3
F2	4-5
F3	6-6
F4	7-7
F5	8-8
F6	9-9
F7	10-10
F8	11-11
F9	12-12
F10	13-13
F11	14-14
F12	15-15
F13	16-16
F14	17-17
F15	18-18
F16	19-20
F17	21-21
F18	22-22
F19	23-23
F20	24-24
F21	25-25

Tabulations of the plotted data and corresponding source data are available from Data Management Services Operations.

DATA SET: SYMBOL CONFIGURATION DESCRIPTION
 (E1FF271) A2DC-1C-219: A2C FIN F1 ON SP-111ER PLATE
 (H1SS18) A2DC-1C154:170: A2C FIN F1 STUDY BIF.
 (H1SS18) A2DC-1C-222: A2C FIN F1 STUDY BIF.
 (H1SS18) A2DC-1C154:170: A2C FIN F1 STUDY BIF.
 (H1SS18) A2DC-1C-222: A2C FIN F1 STUDY BIF.
 (H1SS18) A2DC-1C154:170: A2C FIN F1 STUDY BIF.
 (H1SS18) A2DC-1C-222: A2C FIN F1 STUDY BIF.

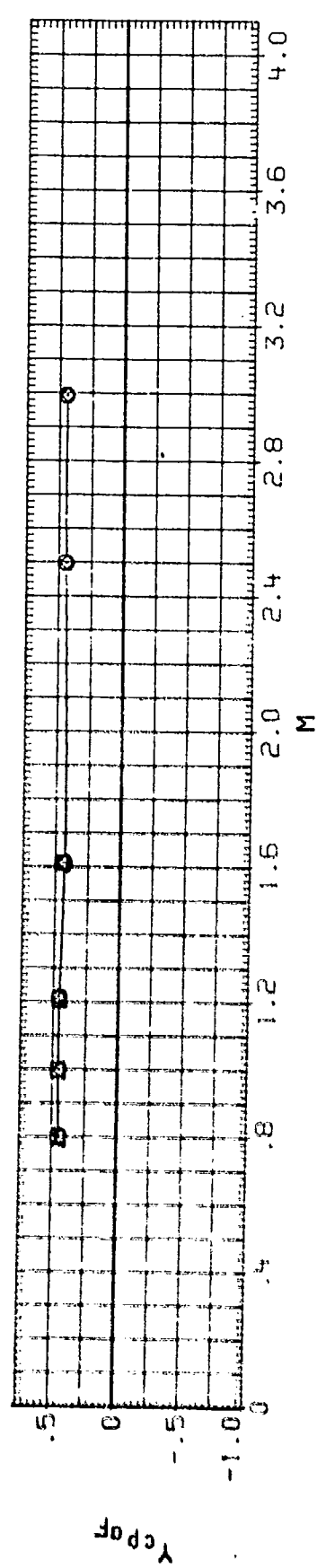
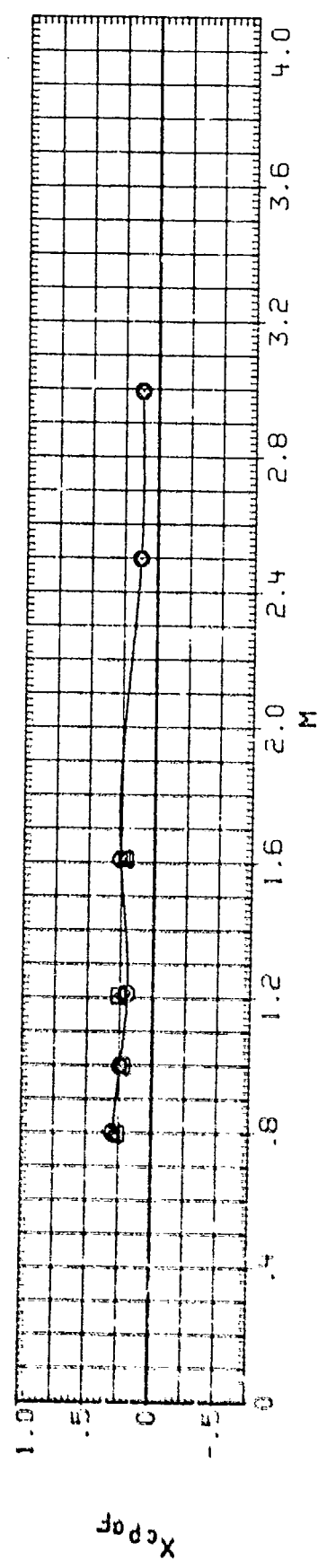
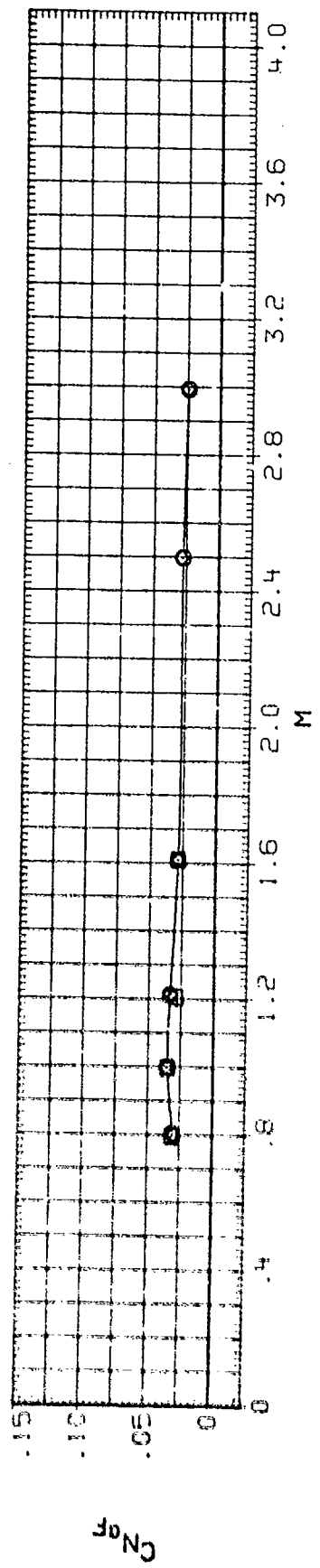
PANEL	LAMBDA	C/D
2.000	.000	1.750
2.000	.000	1.750
2.000	.000	1.750
2.000	.000	1.750
2.000	.000	1.750



[illegible]

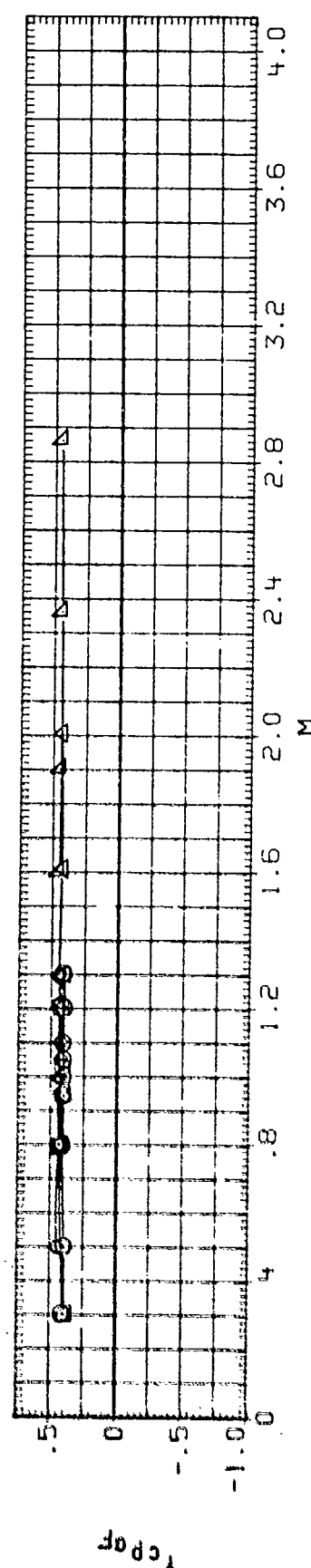
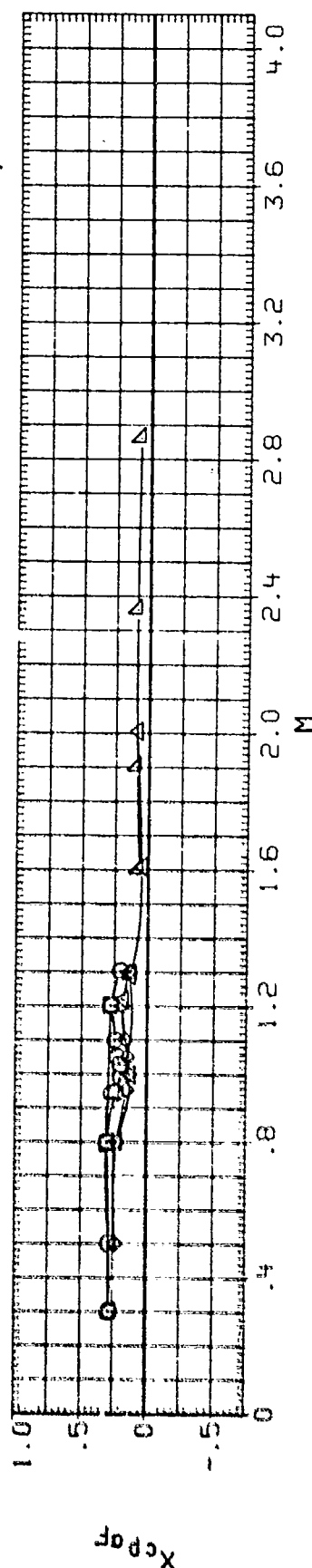
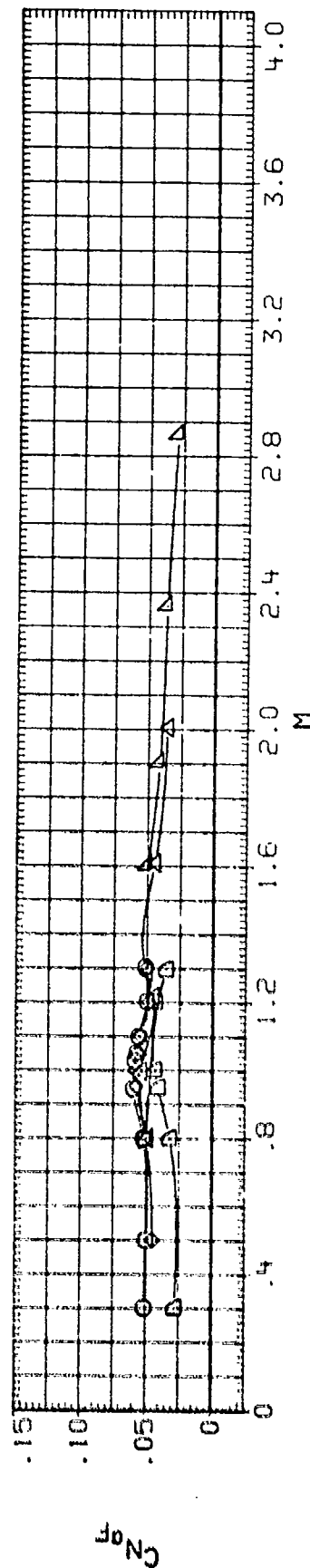
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	B1F1
HYPERON	□	PLC S-255 WRAPAROUND FIN	B1F1
HYPERON	○	PCAL S-255 WRAPAROUND FIN	B2F1
HYPERON	△	PCAL S-255 WRAPAROUND FIN	B2F1
HYPERON	△	PCAL S-255 WRAPAROUND FIN	B2F1

PANEL	LAMBDA	C/D
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2.000	.000	1.750
4.000	.000	1.750
4.000	.000	1.750



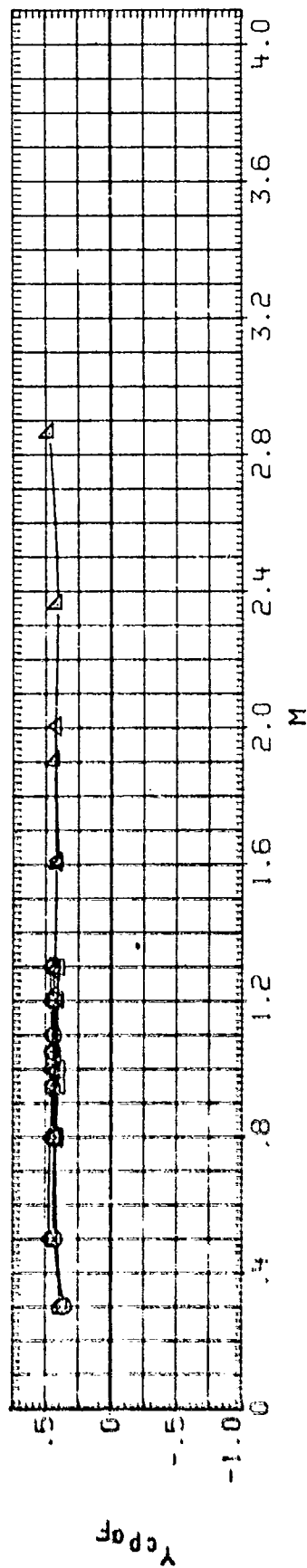
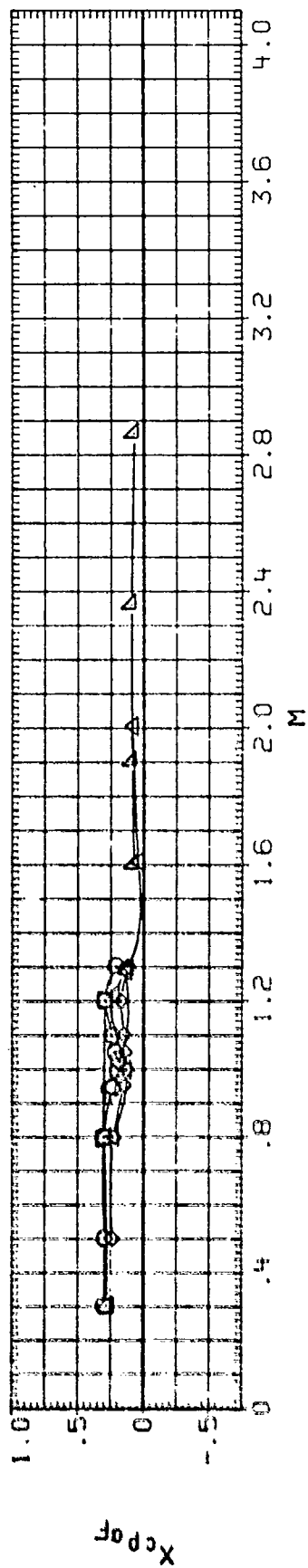
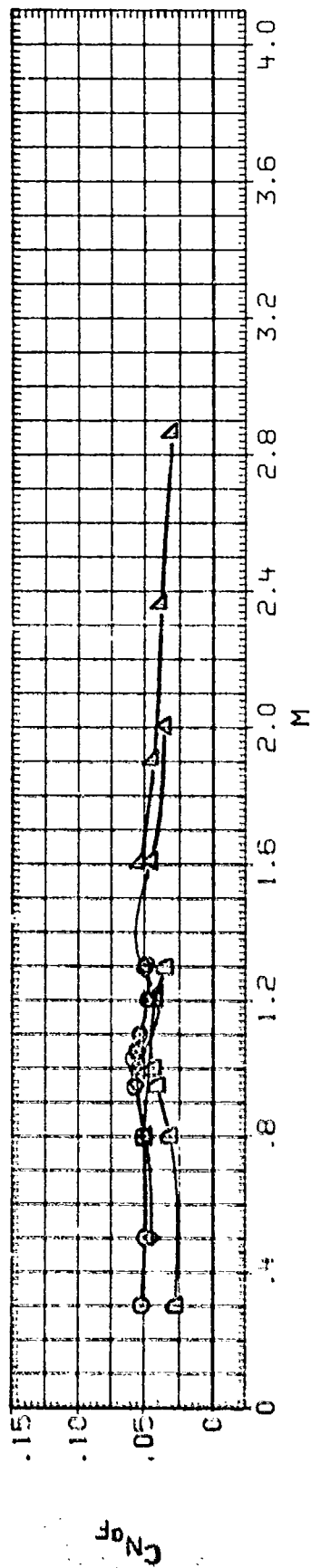
HORIZONTAL FIN PANEL DATA, F1

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PANEL	LAMBDA	C/D
(HYSR17)	0	AEDC-1C15-170. AERIAL FIN STUDY BIF2	2.000	.000	1.000
(HYSR19)	0	MORC S-255 AERAROUND FIN BIF2	2.000	.000	1.000
(HYSR14)	0	AEDC-1C222. WAR FIN STUDY. BIF2	2.000	.000	1.000
(HYSR34)	4	MORC S-255 AERAROUND FIN BIF2	2.000	.000	1.000
(HYSR25)	4	LARC UP-1. SRS ARC WRAP AROUND FIN MODEL BIF2	2.000	.000	1.000
(BIF26)	0	AEDC 1C-219. ARC FIN F2 ON SPLITTER PLATE	2.000	.000	1.000



HORIZONTAL FIN PANEL DATA. F2

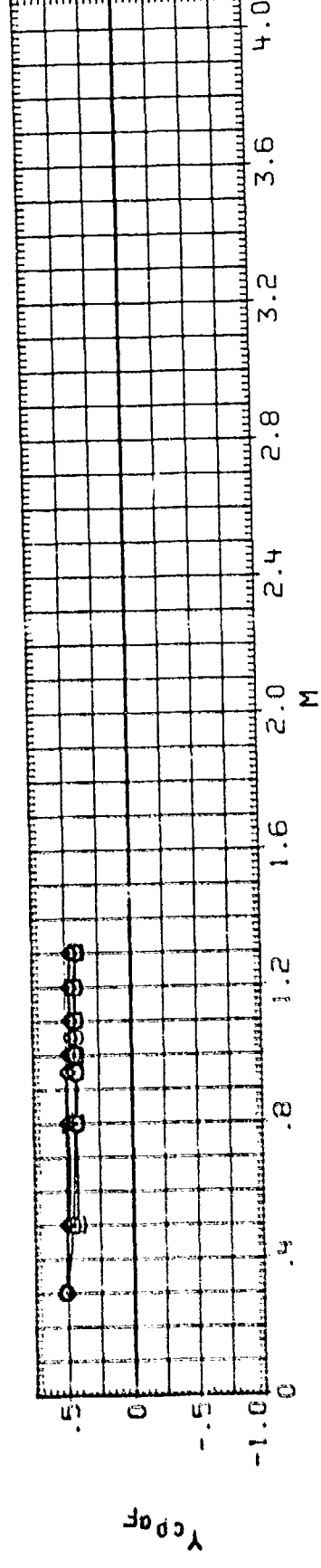
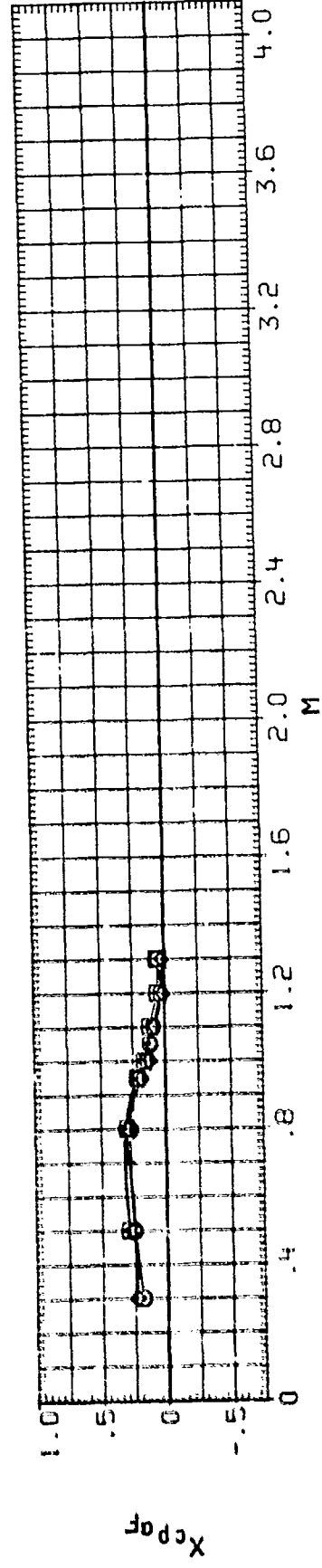
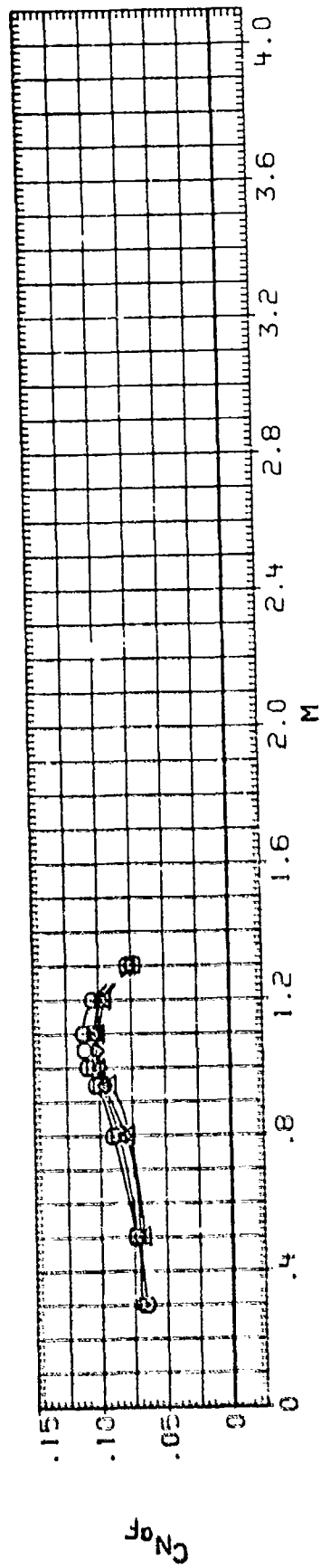
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PANEL	LAMBDA	C/D
MODEL 17	□	AEDC IC-154/170. AFATL FIN STUDY B1F2	4.000	.000	1.000
MODEL 18	◇	MOAC S-255. AIRPAROUND FIN B1F2	4.000	.000	1.000
MODEL 19	△	AEDC IC-202. AAF FIN STUDY. B1F2	4.000	.000	1.000
MODEL 20	△	MOAC S-256. AIRPAROUND FIN B1F2	4.000	.000	1.000
MODEL 21	△	LARE UPAT 980. AWC WRAP AROUND FIN MODEL B1F2	4.000	.000	1.000
MODEL 22	△	AEDC IC-219. AWC FIN F2 ON SPLITTER PLATE	4.000	.000	1.000



HORIZONTAL FIN PANEL DATA, F2

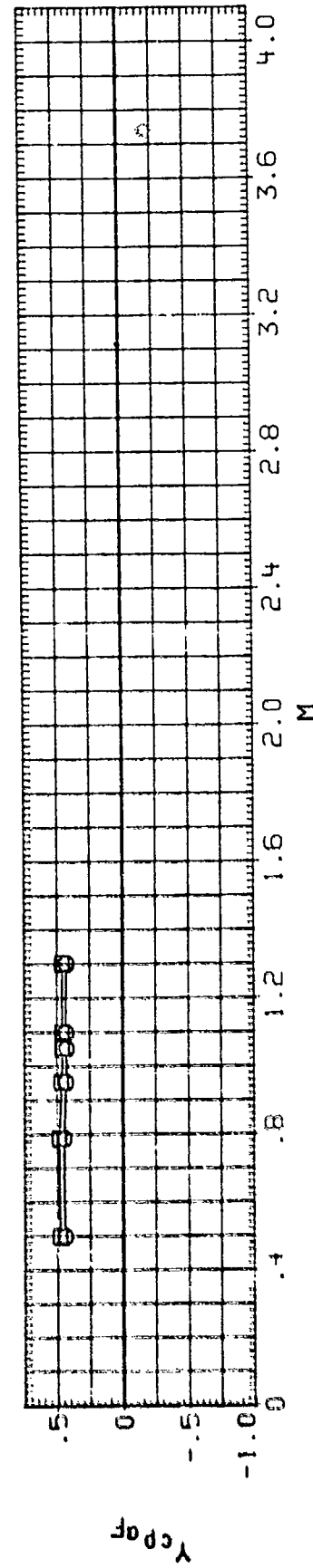
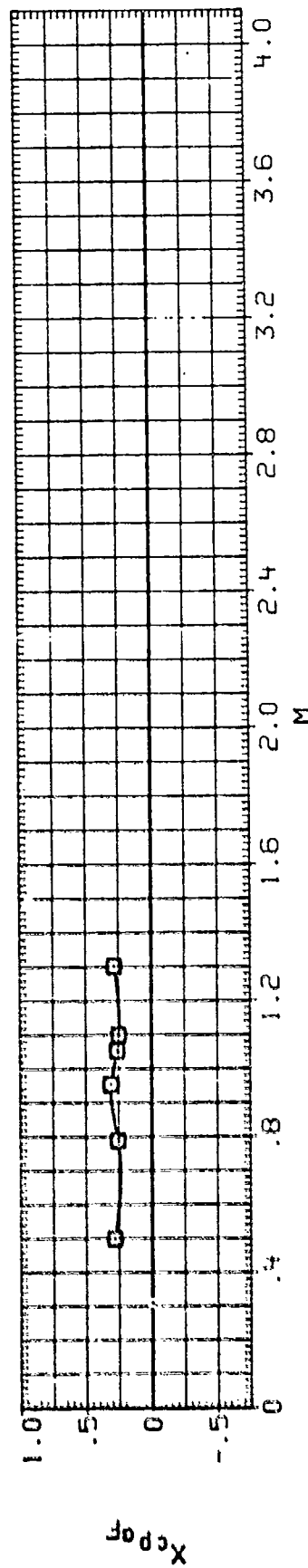
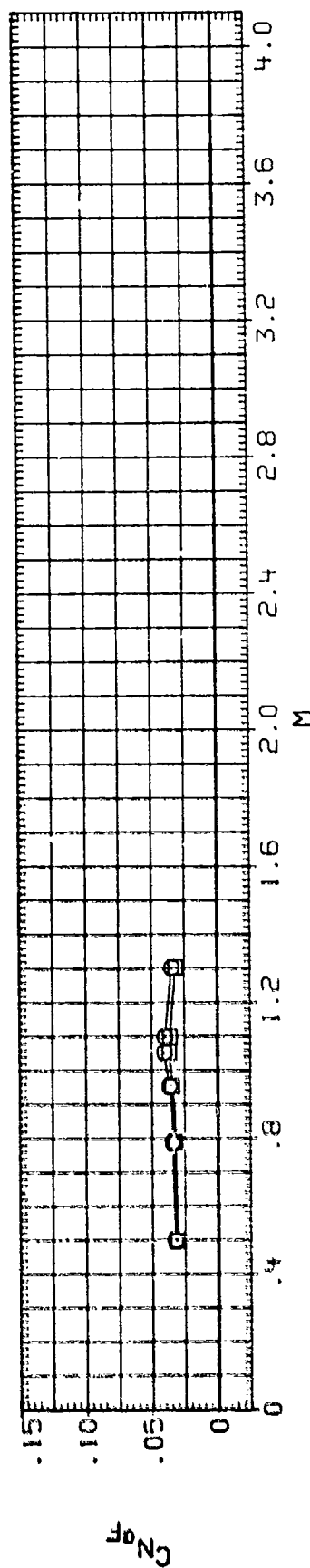
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 INTER41 O AEDC-TC-154/170 AFAL FIN STUDY BIF3
 INTER23 O AEDC-TC-202 WAF FIN STUDY BIF3
 INTER14 O AEDC-TC-154/170 AFAL FIN STUDY BIF3
 INTER22 O AEDC-TC-202 WAF FIN STUDY BIF3

PANEL LAMBDA C/D
 2.000 .000 .500
 2.000 .000 .500
 4.000 .000 .500
 4.000 .000 .500



DATA SET SYMOL CONFIGURATION DESCRIPTION
 INTER311 0 AEDC-TC154/170.AFATL FIN STUDY B1F4
 INTS311 0 AEDC-TC154/170.AFATL FIN STUDY B1F4

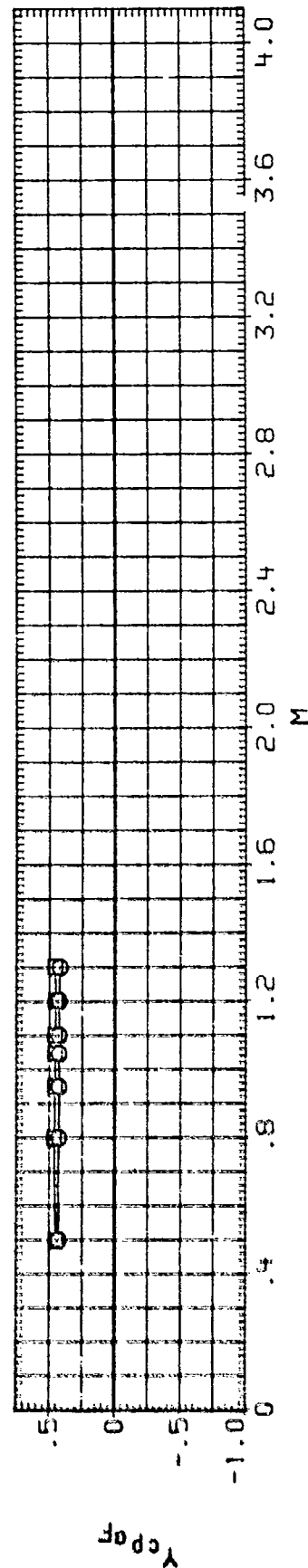
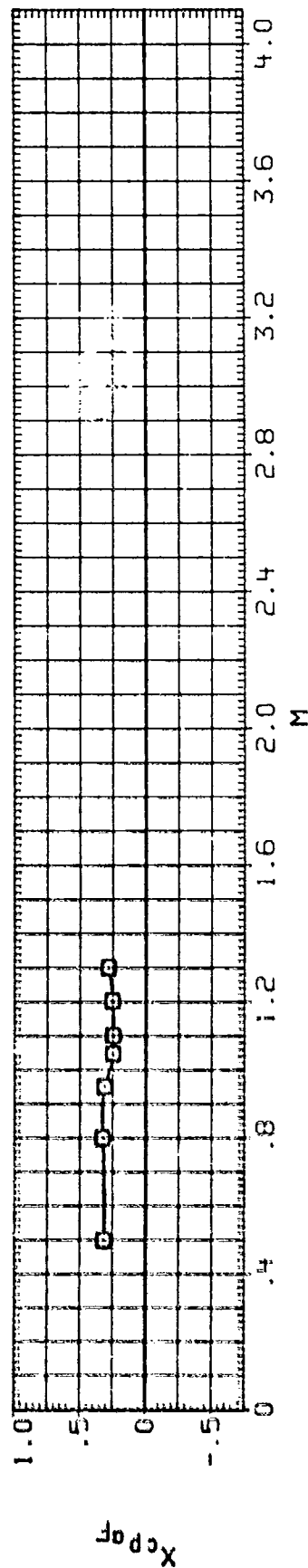
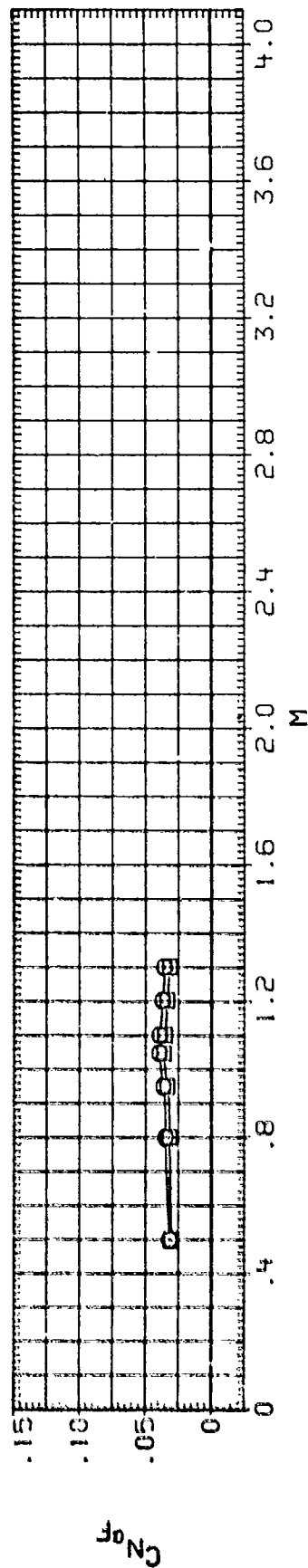
PANEL LAMBDA C/D DELTA
 2.000 .000 1.750 90.000
 4.000 .000 1.750 90.000



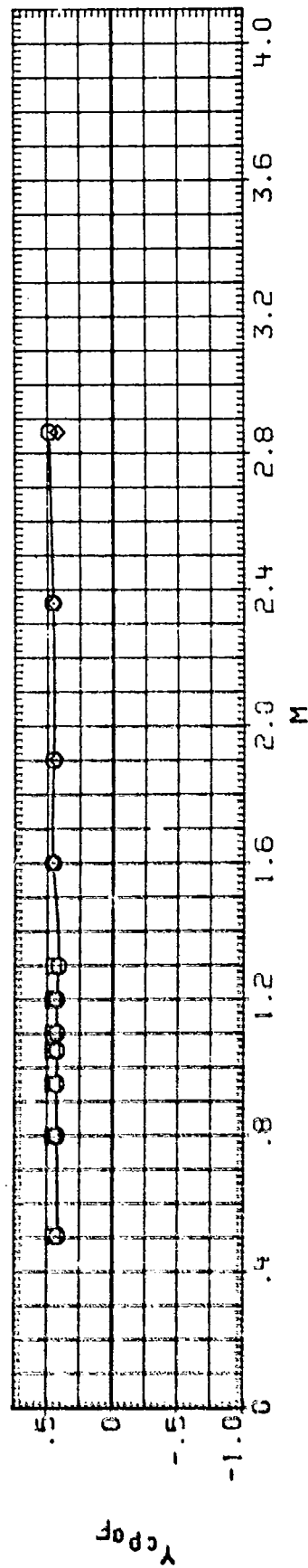
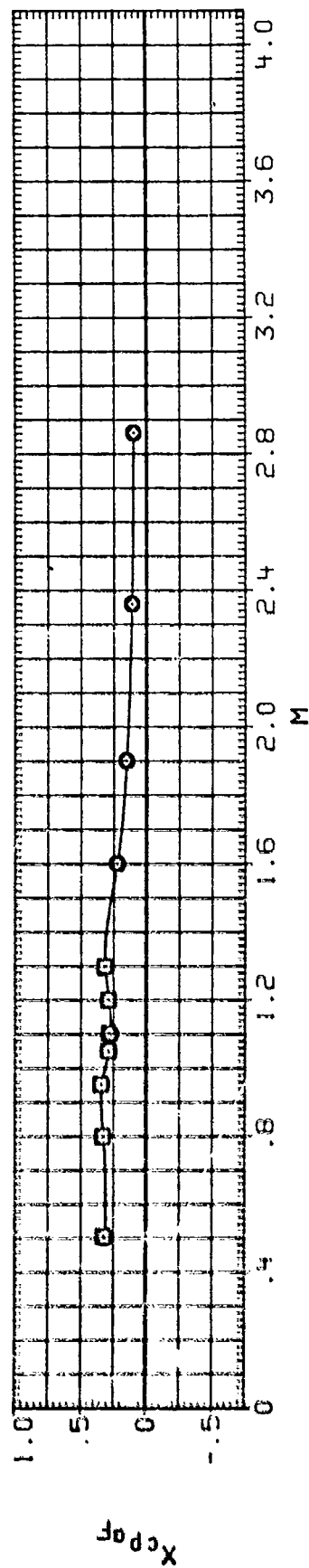
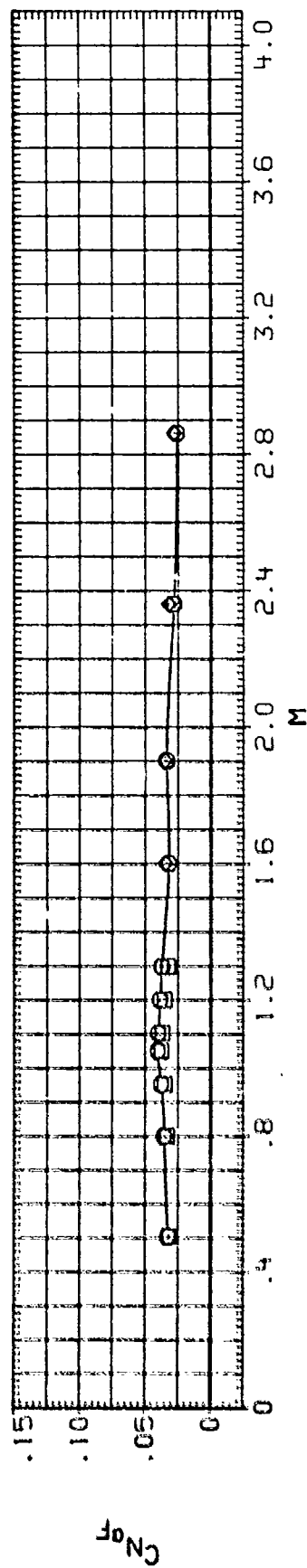
HORIZONTAL FIN PANEL DATA, F4

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H19833) ☐ AEOC-IC154/175.AFATL FIN STUDY B1F5
 (H19833) ☐ AEOC-IC154/175.AFATL FIN STUDY B1F5

PANEL LAMBDA C/D DELTA
 2.000 .000 1.750 20.000
 4.000 .000 1.750 20.000



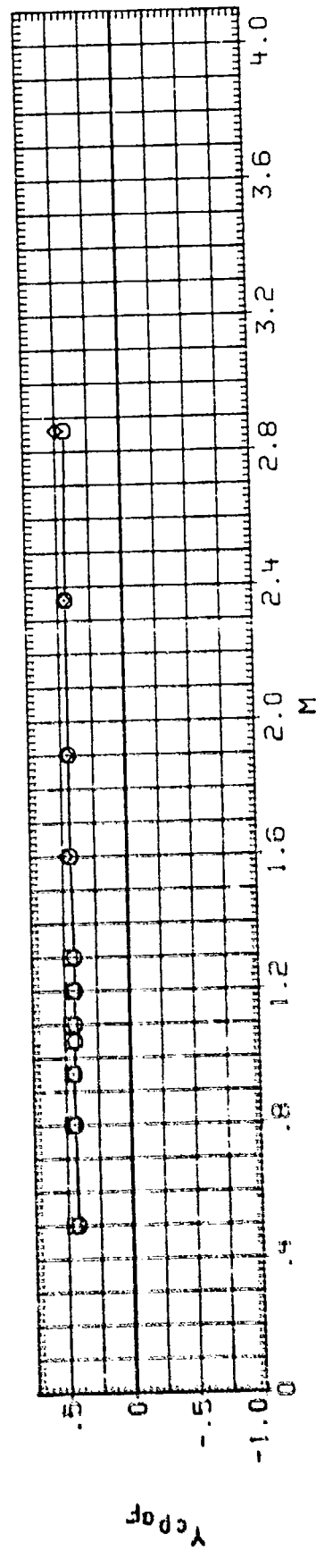
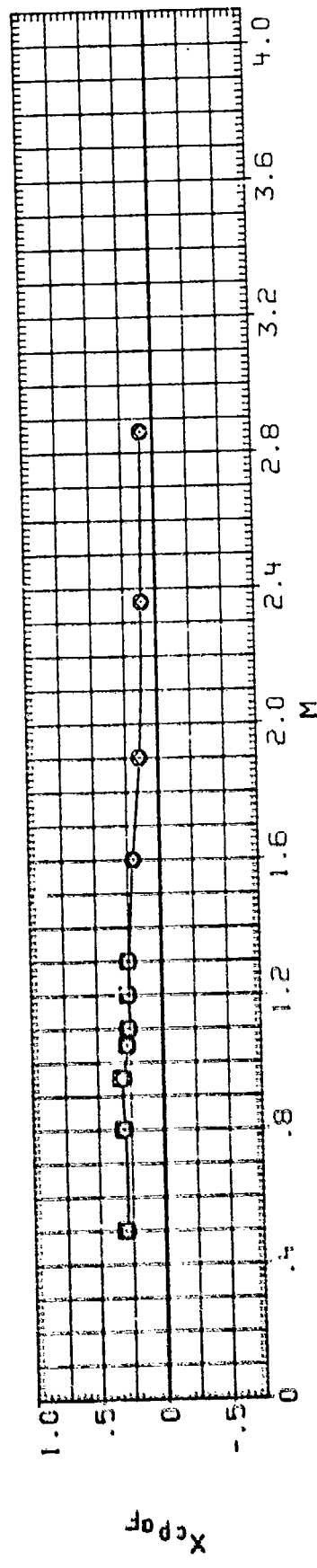
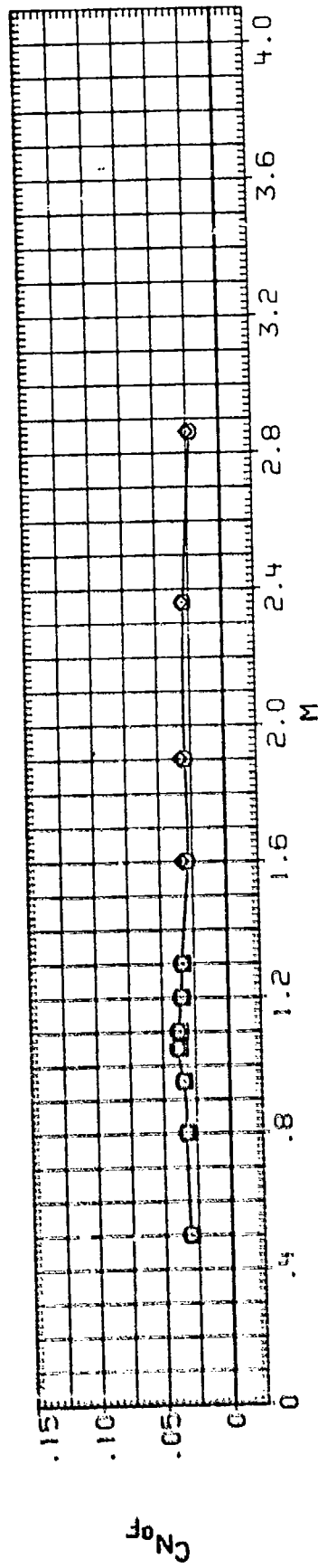
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	81FS
UT09151	□□	AEDC-TC15A/170.ATAIL FIN STUDY	81FS
UT09151	□□	AEDC-TC15A/170.ATAIL FIN STUDY	81FS
INX0201	◇	LARGE UPWT 980 ARC WRAP AROUND FIN MODEL	81FS



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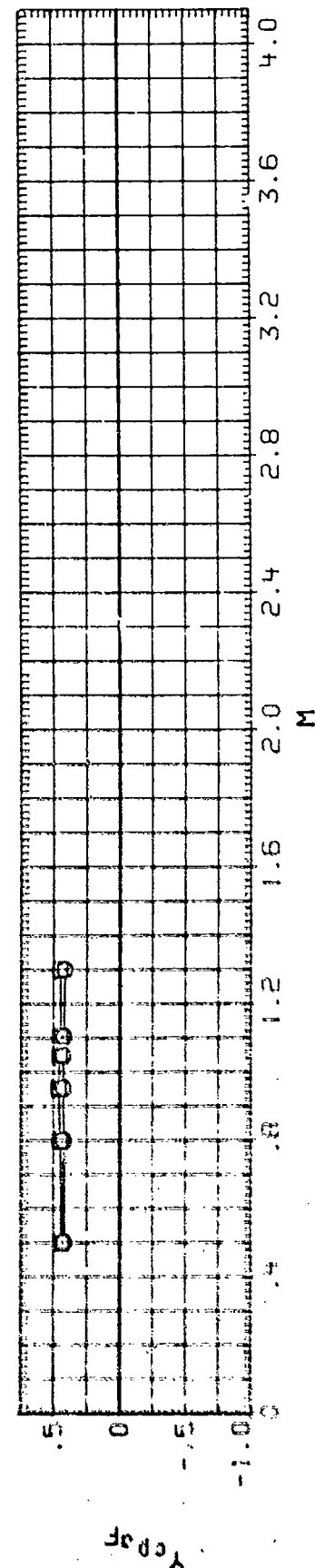
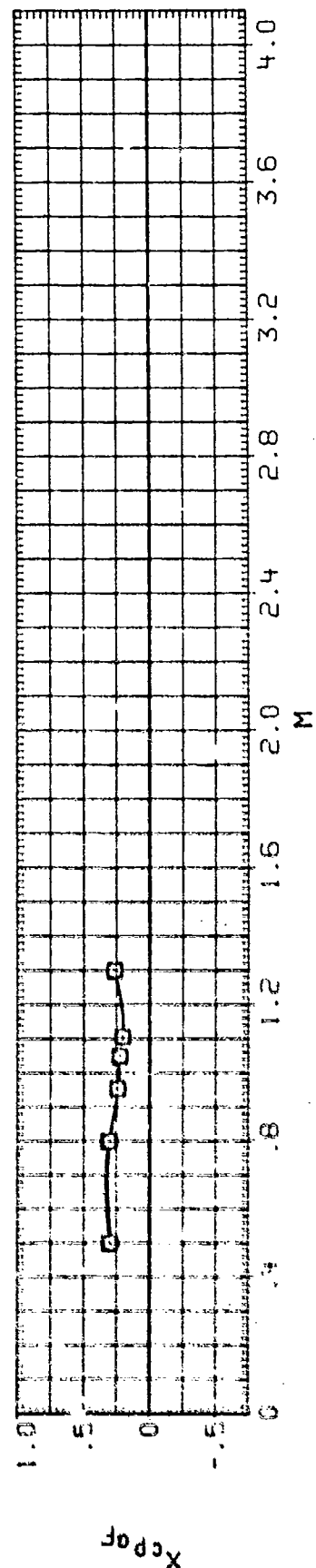
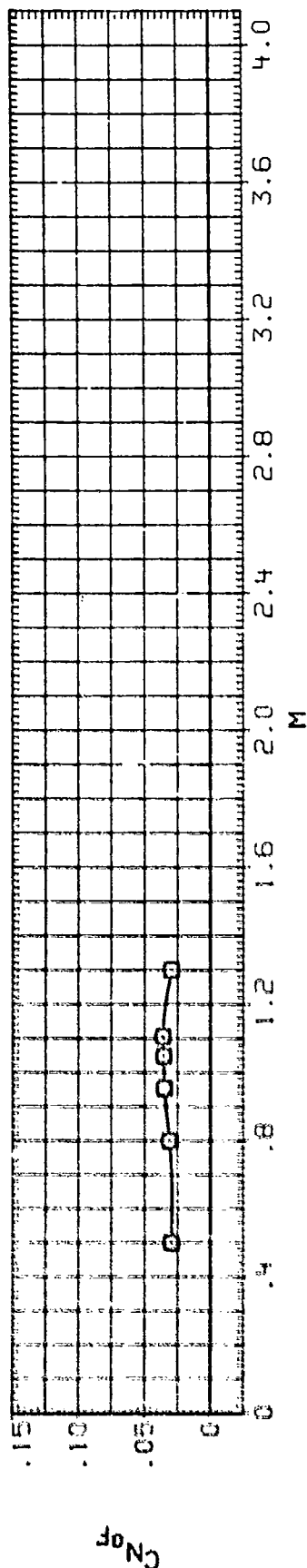
DATA SET SYMBOL CONFIGURATION DESCRIPTION PANEL LAMBDA C/D T/C

PH08371 AEDC-TC154/170-AFAL FIN STUDY B1F7
PH08371 AEDC-TC154/170-AFAL FIN STUDY B1F7
PH08371 AEDC-TC154/170-AFAL FIN STUDY B1F7
PH08371 AEDC-TC154/170-AFAL FIN STUDY B1F7

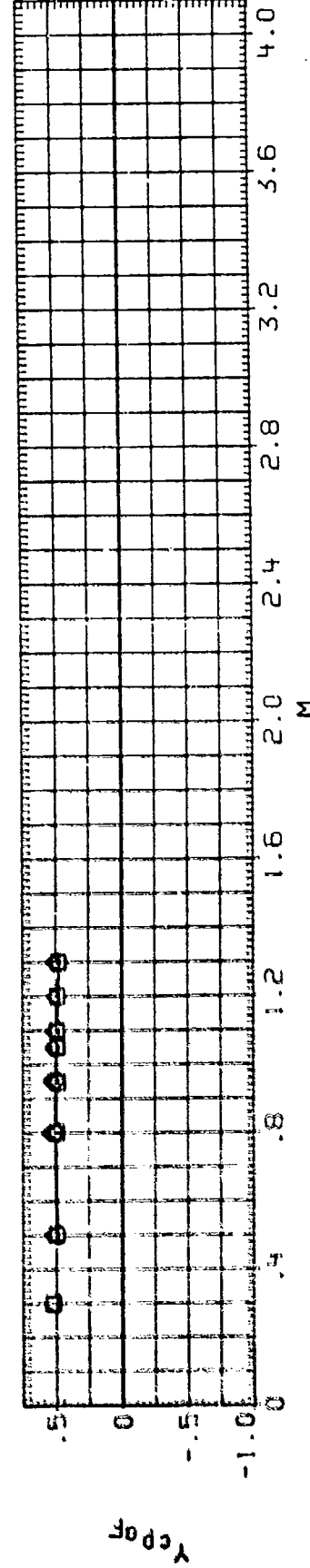
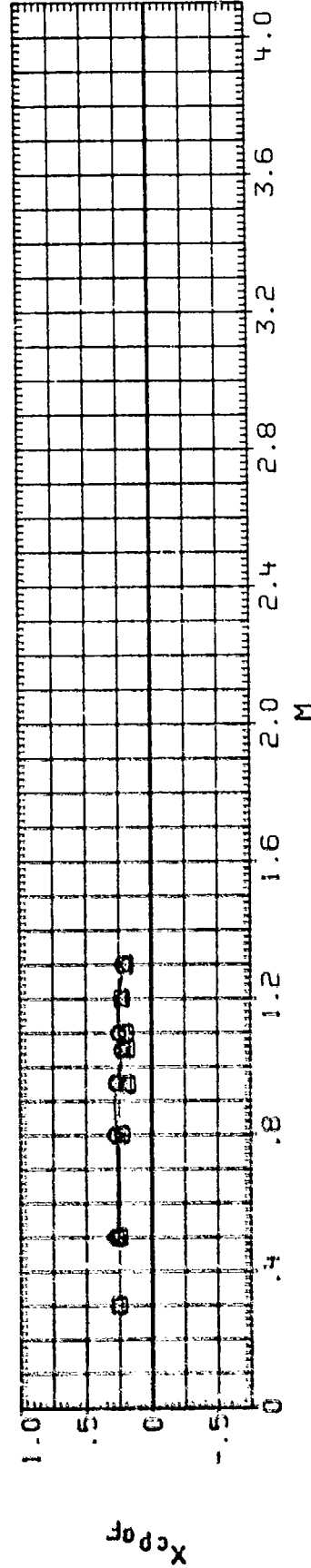
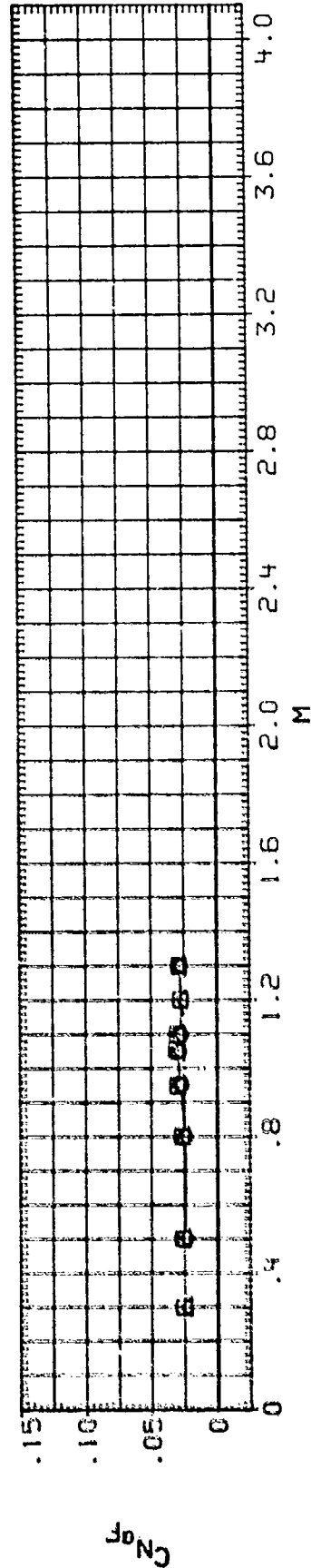


DATA SET 5000L CONFIGURATION DESCRIPTION
 PANEL LAMBDA C/D T/C
 2.000 .000 1.750 .045
 4.000 .000 1.750 .045

ADDC-10154/170. AFATL FIN STUDY BIFB
 ADDC-10154/170. AFATL FIN STUDY BIFB



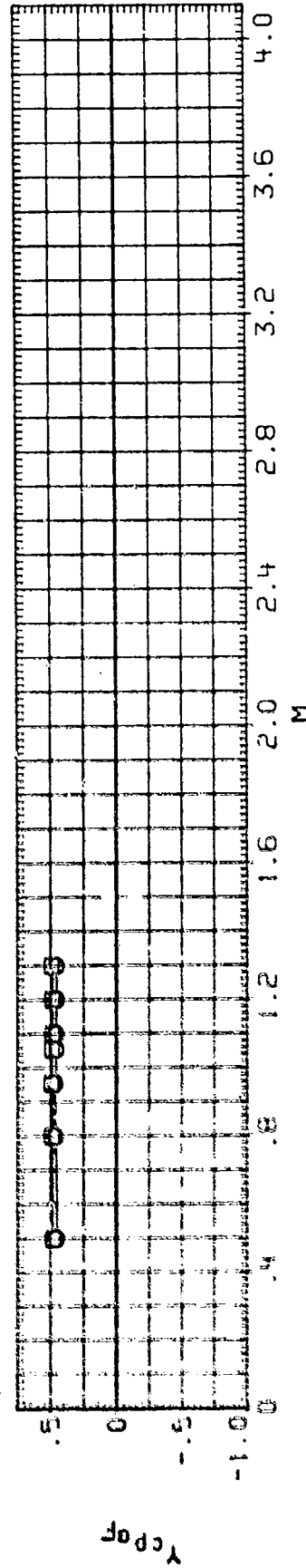
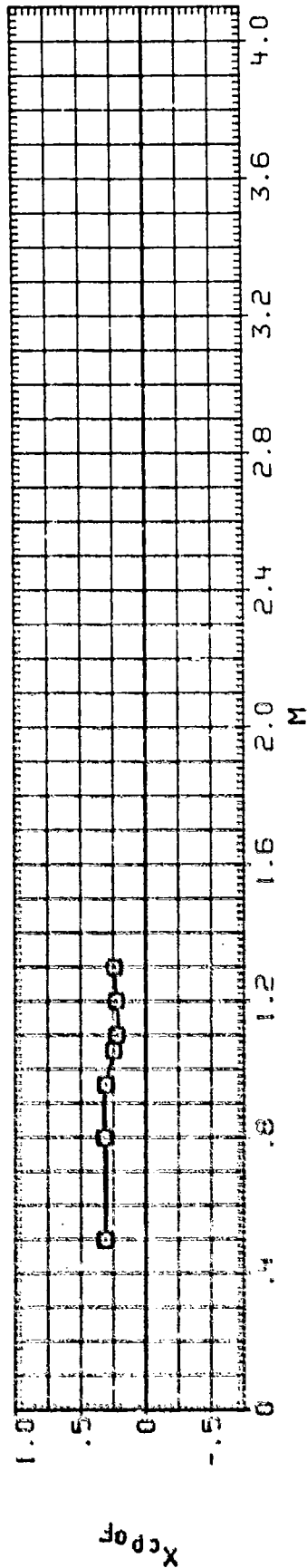
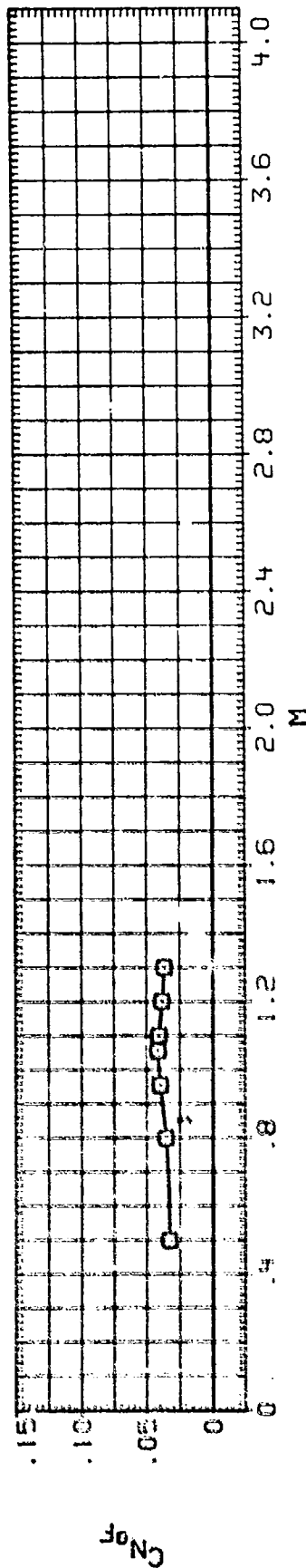
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PANEL	LAMBDA	C/D	T/C
(MIS)31	○	AEC-1C15W/170.AFATL FIN STUDY B2F10	2.000	.000	1.750	.029
(MIS)32	□	AEC-1C15W/170.AFATL FIN STUDY B2F10	2.000	.000	1.750	.029
(MIS)33	◇	AEC-1C15W/170.AFATL FIN STUDY B2F10	4.000	.000	1.750	.029
(MIS)34	△	AEC-1C15W/170.AFATL FIN STUDY B2F10	4.000	.000	1.750	.029



HORIZONTAL FIN PANEL DATA, F10

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 INTERPOLATED AFAL FIN STUDY B1F11
 INTERPOLATED AFAL FIN STUDY B1F11

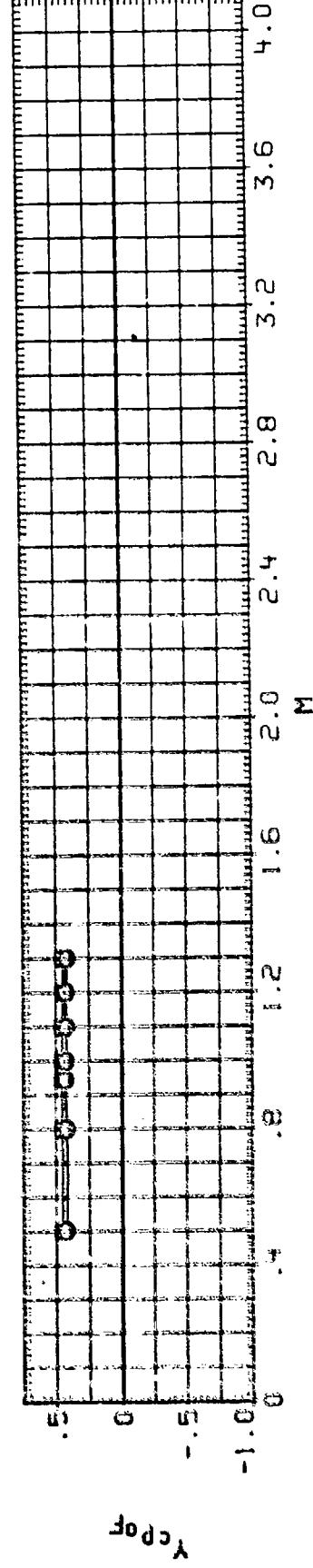
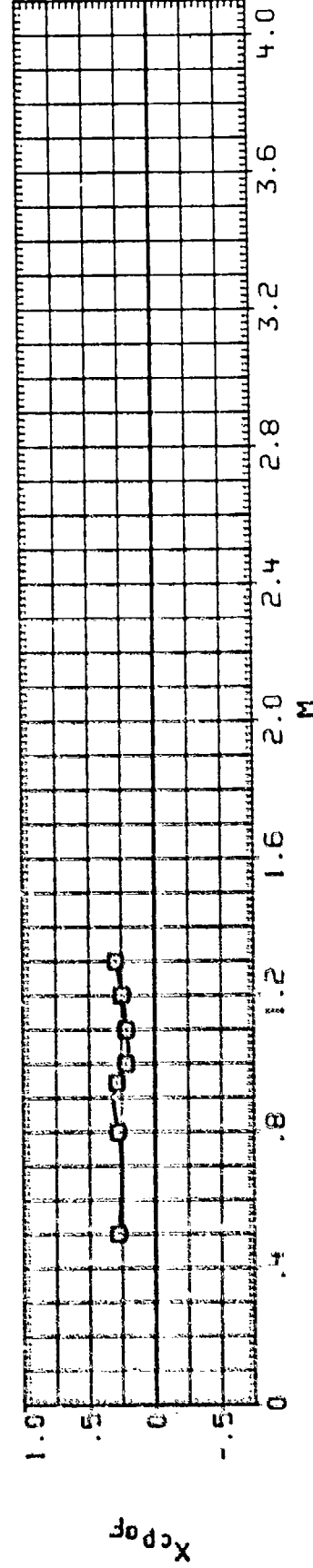
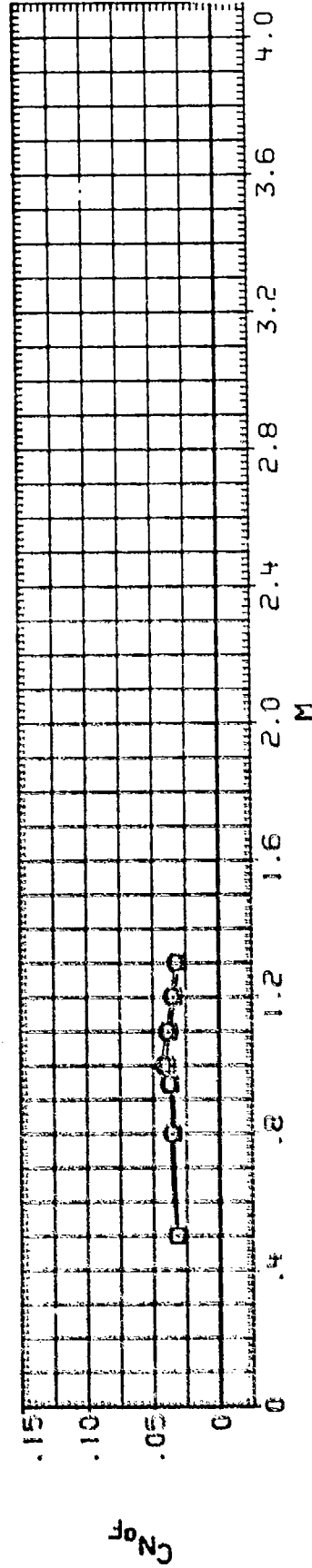
PANEL LAMBDA C/D T/C
 2.000 .000 1.750 .029
 4.000 .000 1.750 .029



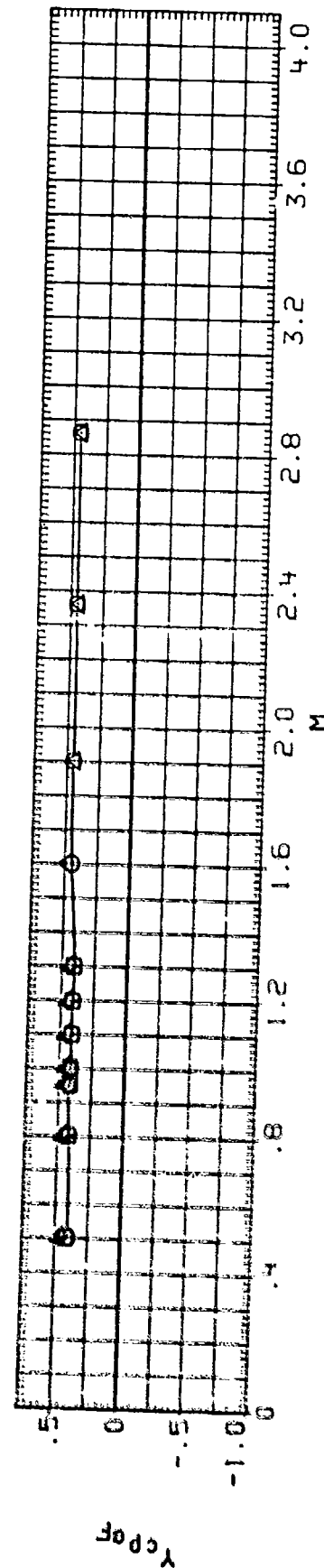
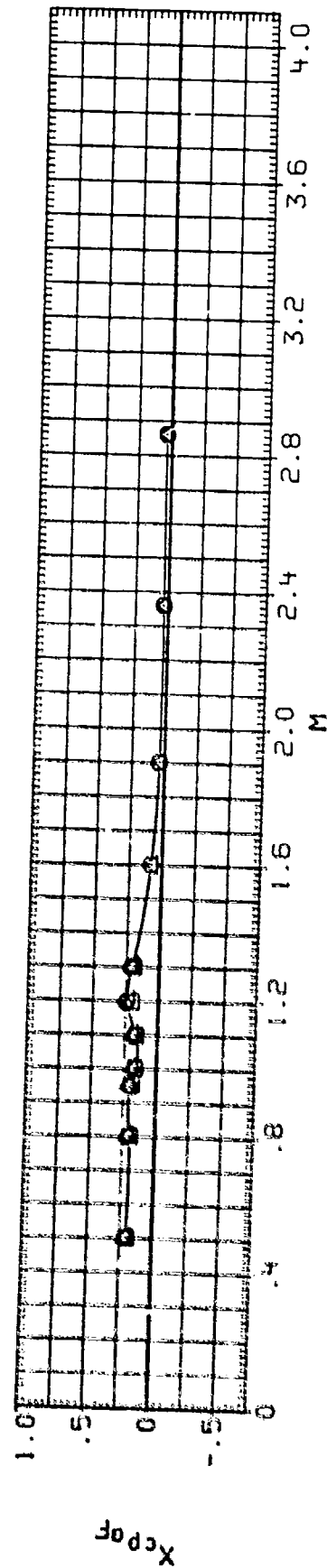
HORIZONTAL FIN PANEL DATA, F11

DATA SET 51202 CONFIGURATION DESCRIPTION
 INTERP3: 8 ALOC-1C-202, WAF FIN STUDY, BIF12
 INTERP3: 8 ALOC-1C-202, WAF FIN STUDY, BIF12

PANEL LAMBDA C/D T/C
 2.000 14.750 1.750 .029
 4.000 14.750 1.750 .029



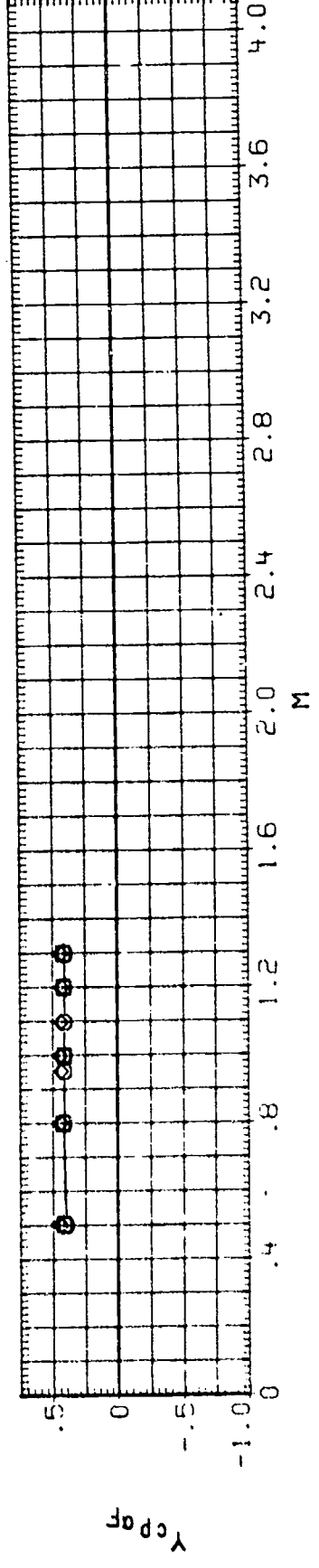
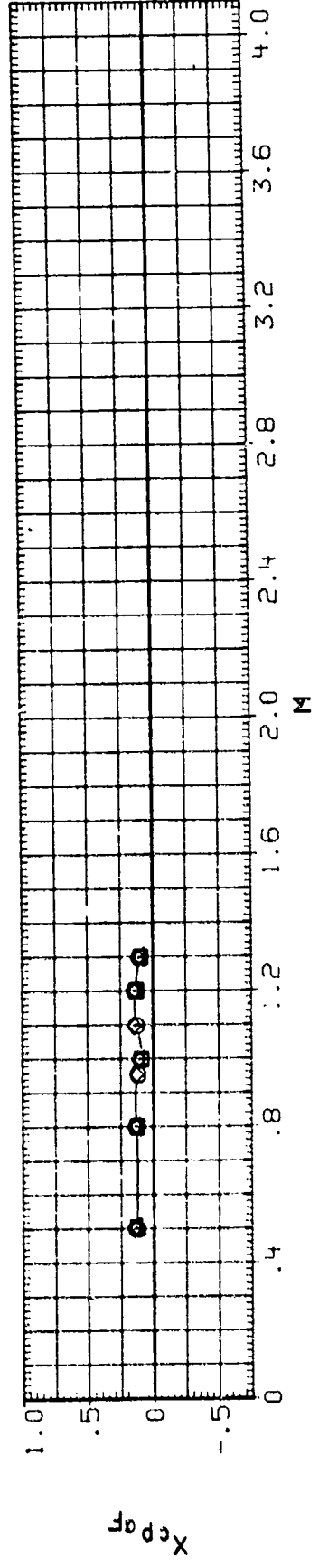
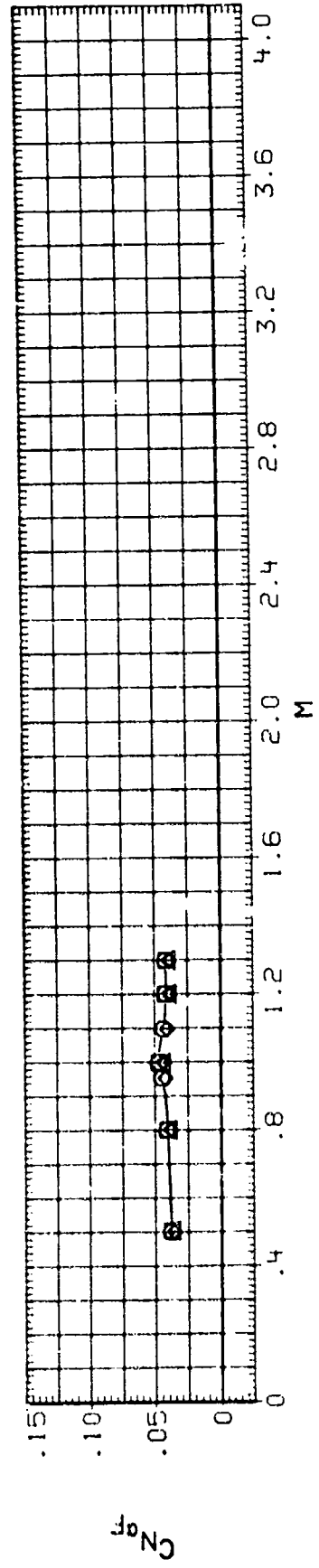
M	C_{NaF}
0.4	0.45
0.8	0.55
1.2	0.65
1.6	0.60
2.0	0.55
2.4	0.50
2.8	0.45



HORIZONTAL FIN PANEL DATA, F13

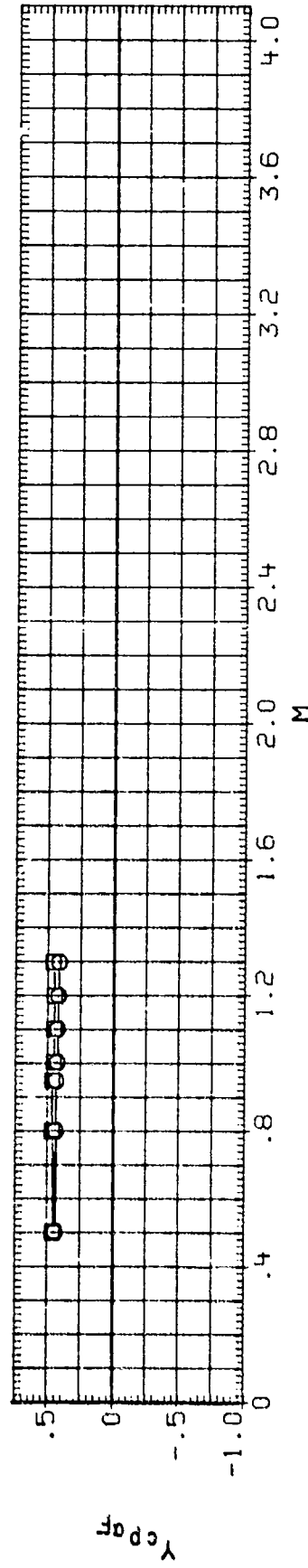
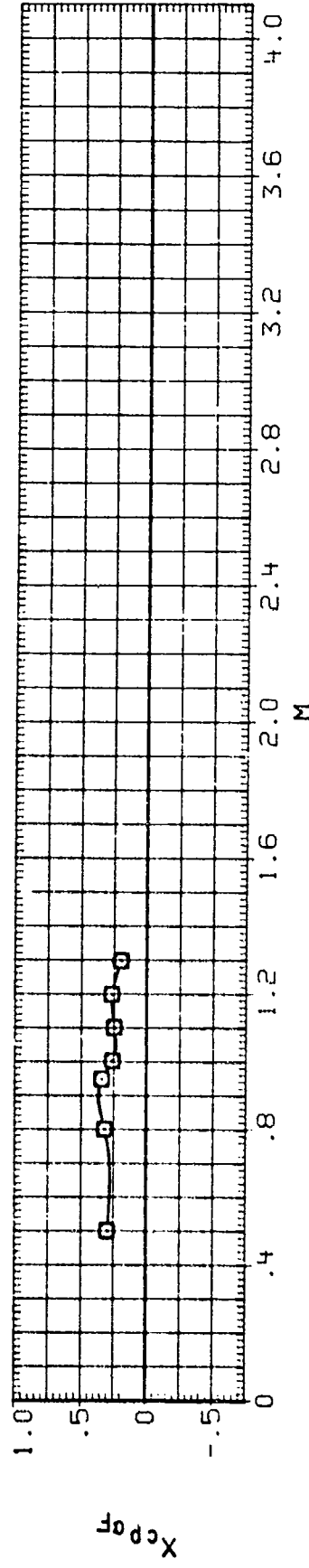
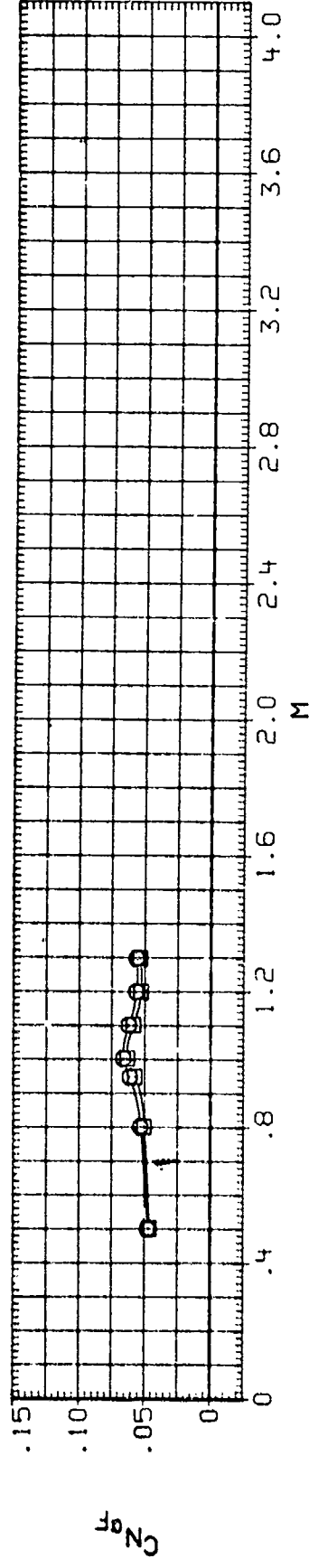
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (HTR937) ○ AEDC-TC-202, WAF FIN STUDY, BIF14
 (HX3006) □ AEDC TC 273 WRAPAROUND FIN BIF14
 (HTR937) ◇ AEDC-TC-202, WAF FIN STUDY, BIF14
 (HX3006) △ AEDC TC 273 WRAPAROUND FIN BIF14

PANEL LAMBDA C/D T/C
 2.000 46.900 1.750 .029
 2.000 46.900 1.750 .029
 4.000 46.900 1.750 .029



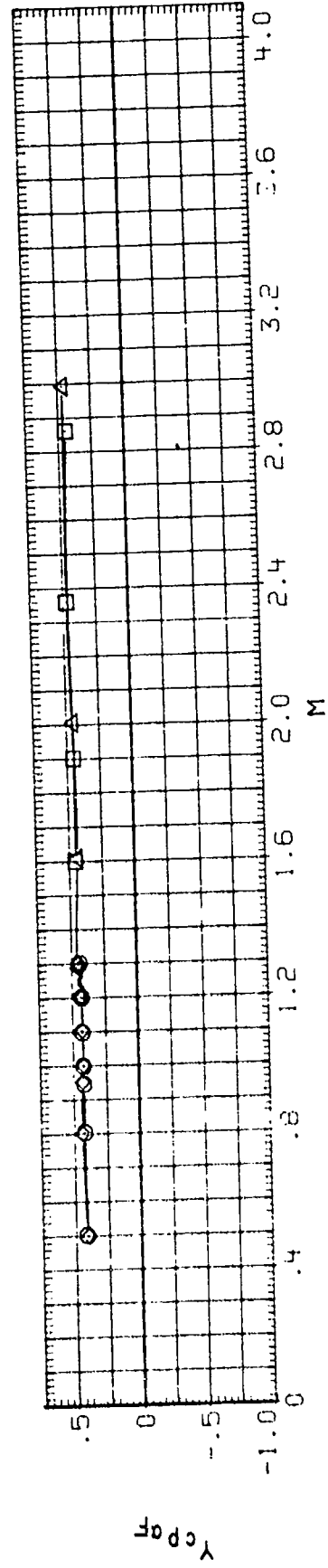
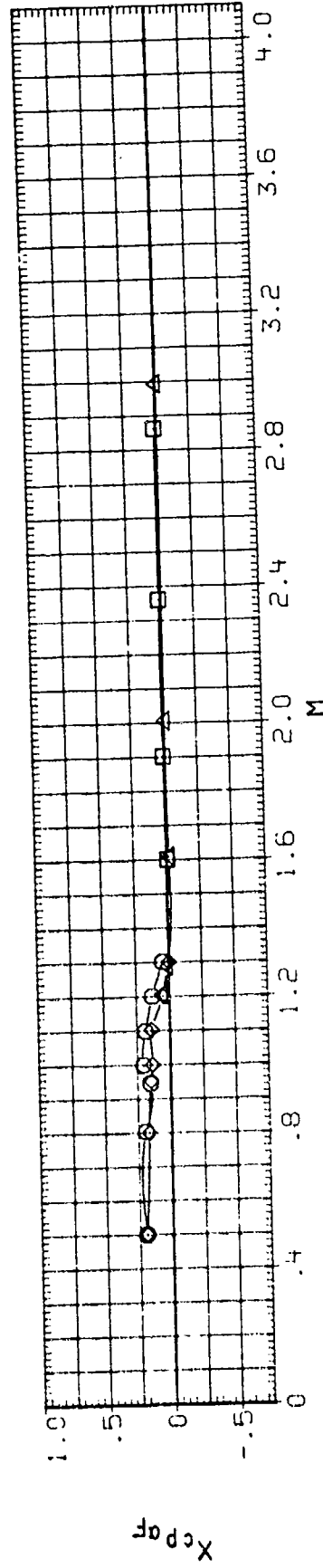
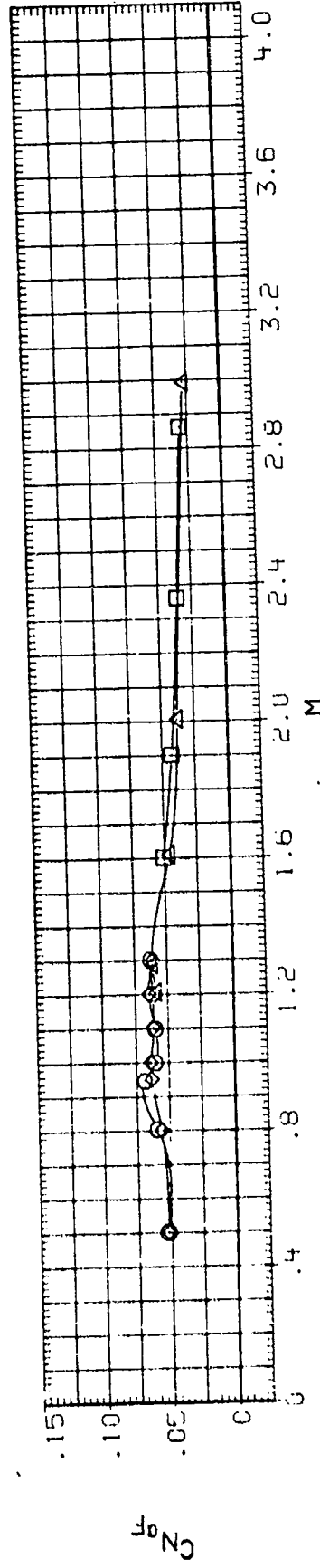
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (HTBRII) ☐ AEDC-TC-202. WAF FIN STUDY. BIF15
 (HTBLII) ☐ AEDC-TC-202. WAF FIN STUDY. BIF15

PANEL LAMBDA C/D T/C
 2.000 .000 1.000 .010
 4.000 .000 1.000 .010

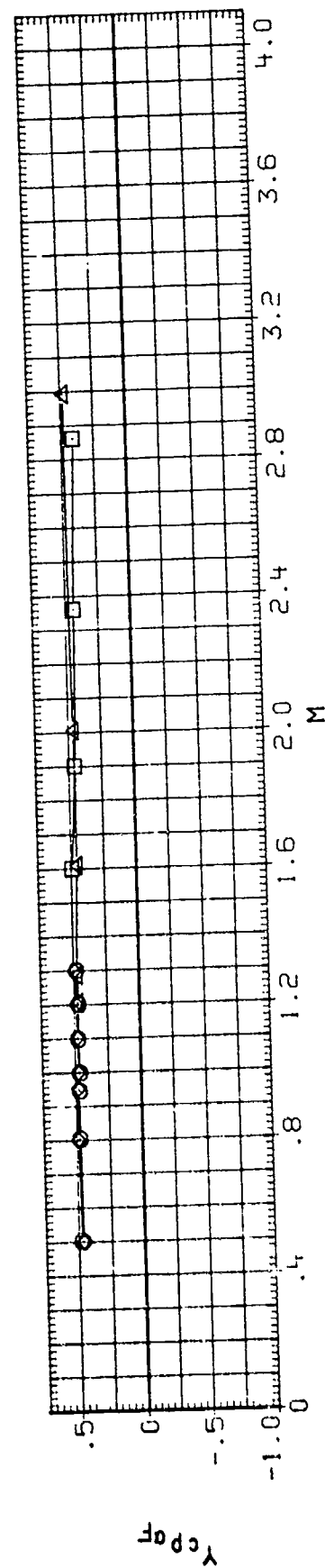
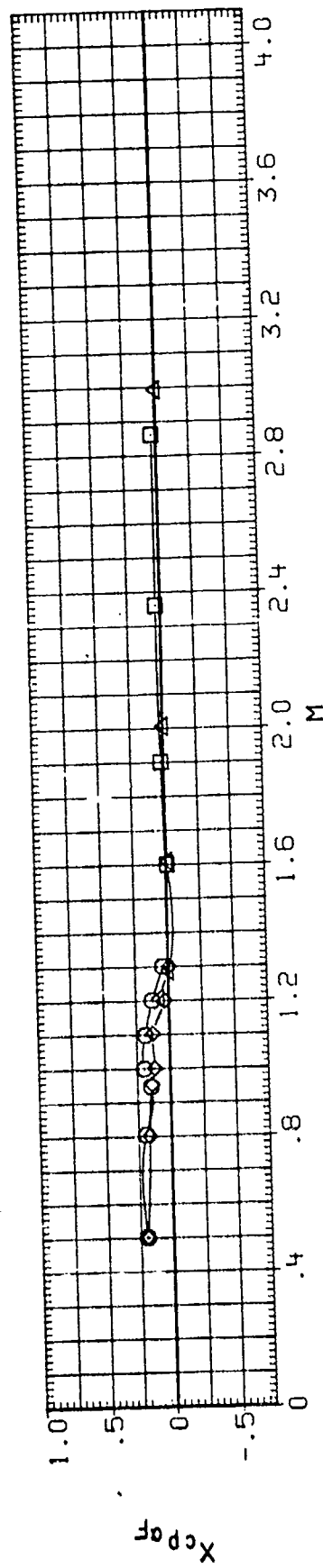
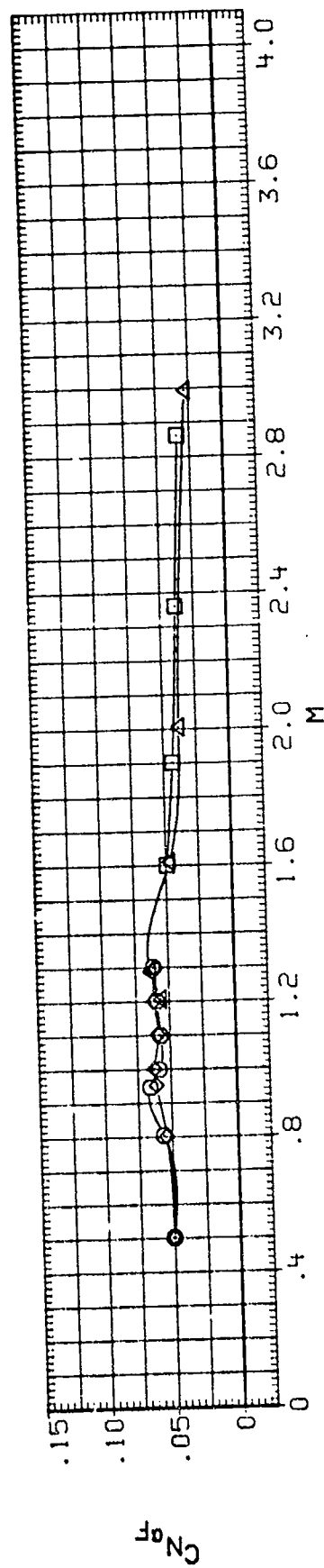


HORIZONTAL FIN PANEL DATA, F15

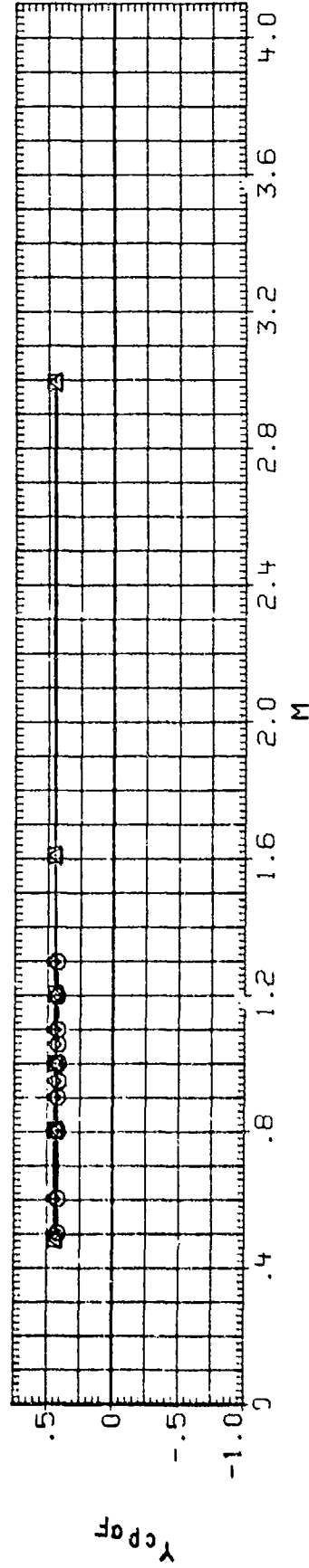
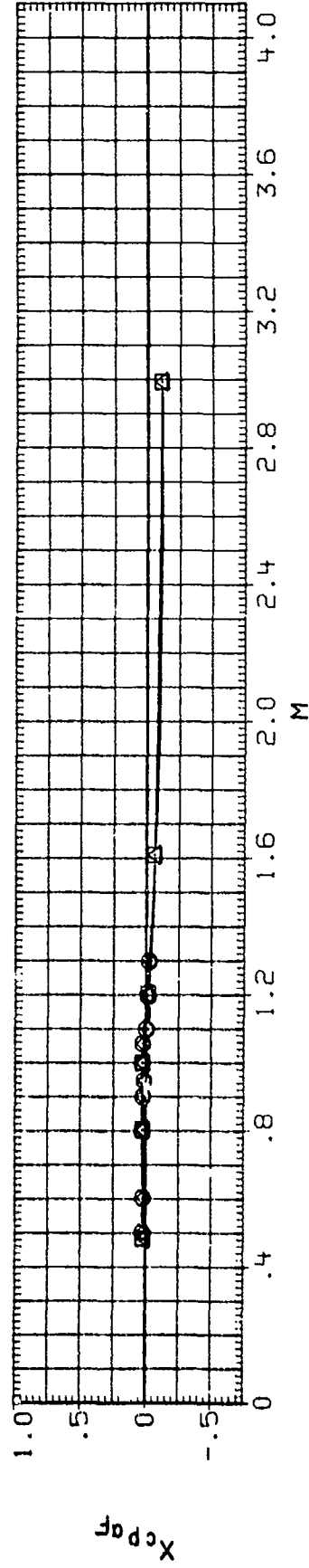
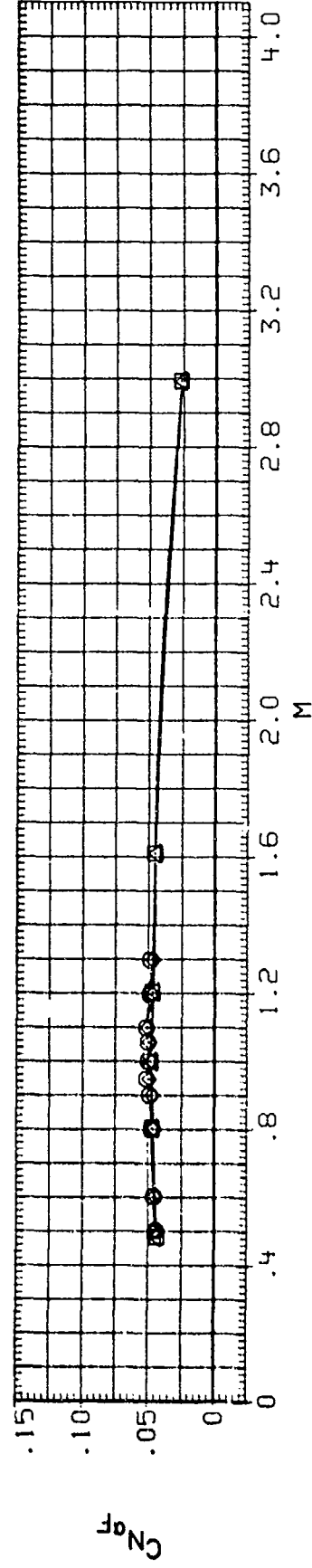
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PANEL	LAMBDA	C/D	T/C
(HTR12)	○	AEDC-TC-202, WAF FIN STUDY, B1F16	2.000	20.050	1.000	.029
(HXR19)	□	LARC UPAT S80 AMC WRAP AROUND FIN MODEL B1F16	2.000	20.050	1.000	.029
(HTR17)	◇	AEDC-TC-202, WAF FIN STUDY, B3F16	2.000	20.050	1.000	.029
(HXR37)	△	MDAC S-256 WRAP AROUND FIN B3F16	2.000	20.050	1.000	.029



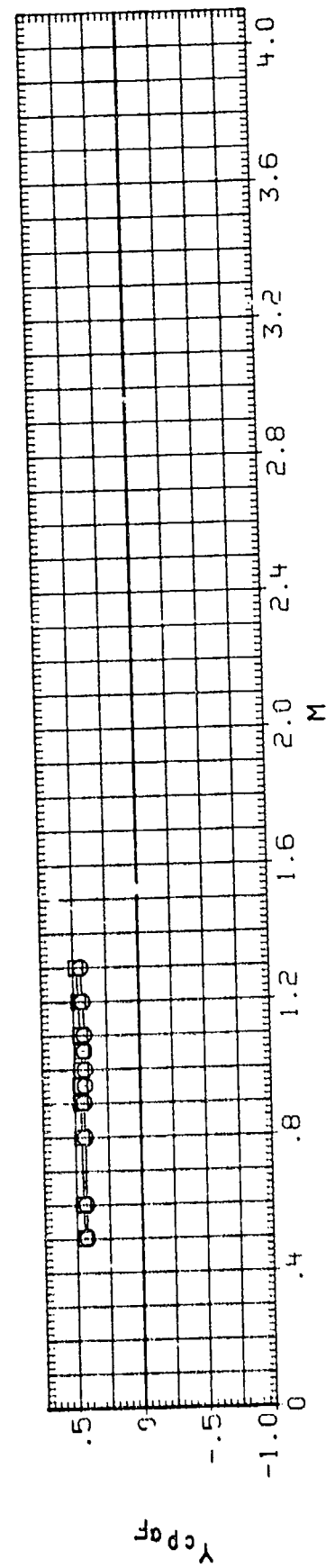
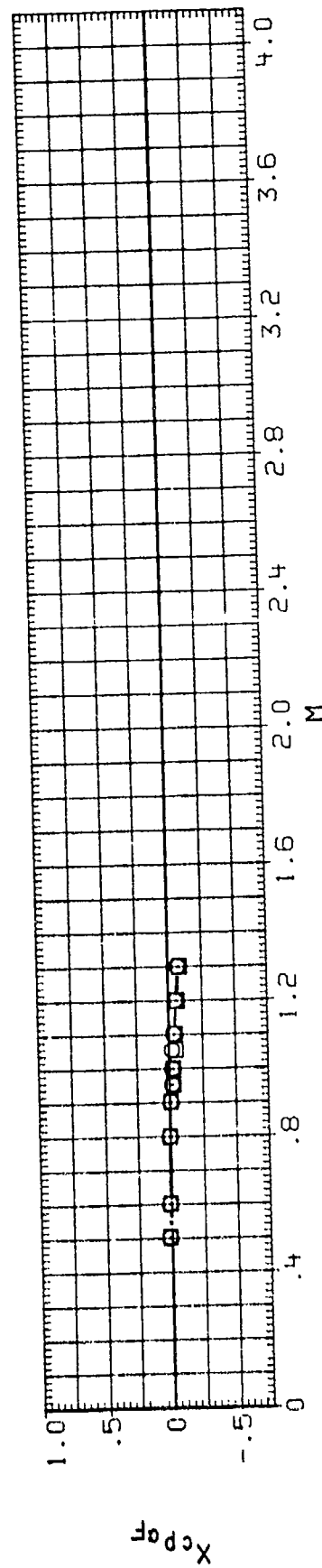
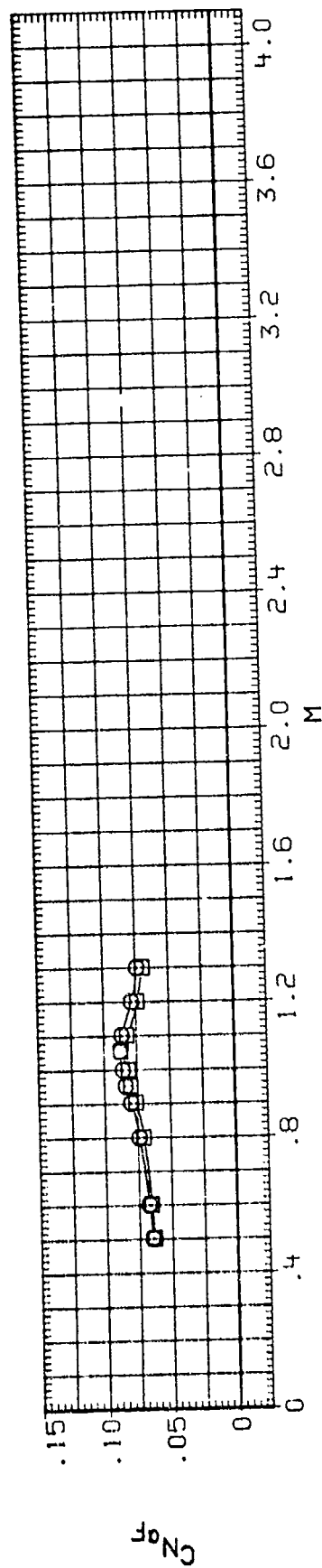
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PANEL	LAMBDA	C/D	T/C
(HTEL12)	○	AEDC-TC-202, WAF FIN STUDY, B1F16	4.000	20.050	1.000	.029
(HXL19)	□	LARC UPAT 980 AMC WRAP AROUND FIN MODEL B1F16	4.000	20.050	1.000	.029
(HTEL17)	◇	AEDC-TC-202, WAF FIN STUDY, B3F16	4.000	20.050	1.000	.029
(HXSL37)	△	MDAC S-256 WRAP AROUND FIN	4.000	20.050	1.000	.029



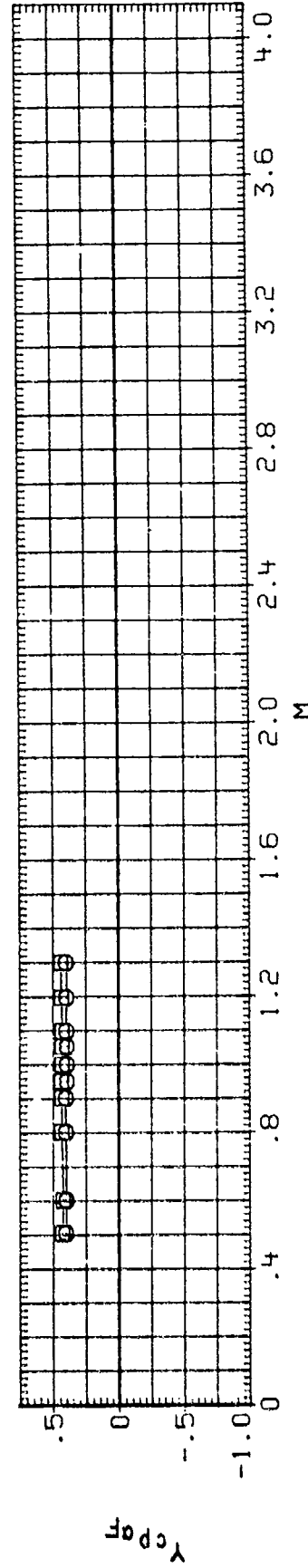
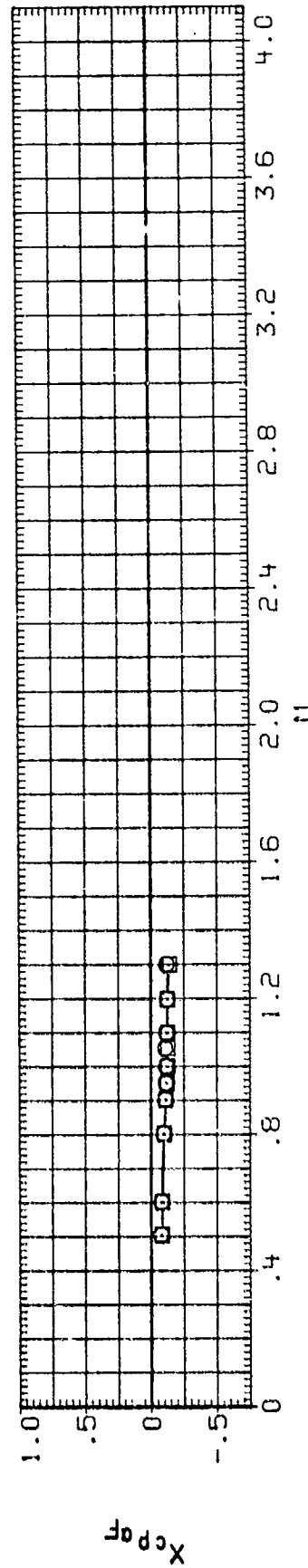
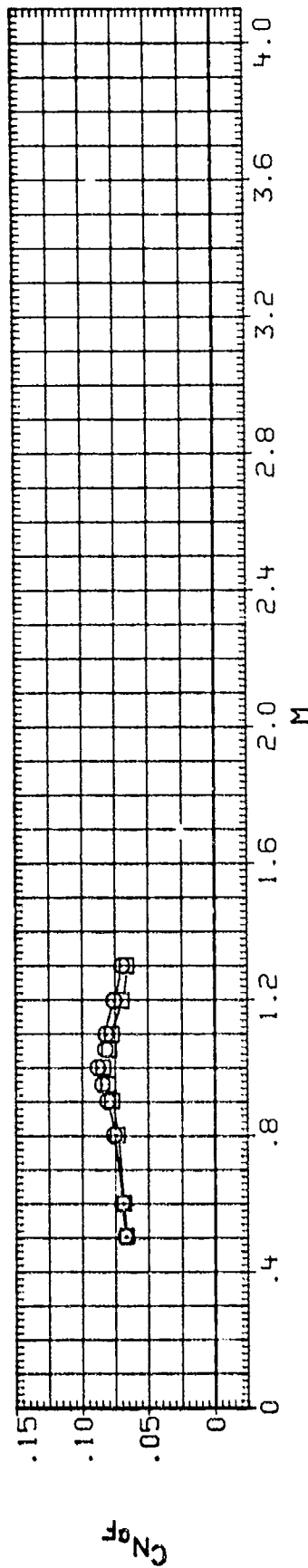
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PANEL	LAMBDA	C/D	T/C
(HX3R08)	○	AEDC TC 273 WRAPAROUND FIN B1F17	2.000	60.000	1.750	.029
(HX5R22)	□	MDAC S-256 WRAPAROUND FIN B1F17	2.000	60.000	1.750	.029
(HX3L08)	◇	AEDC TC 273 WRAPAROUND FIN B1F17	4.000	60.000	1.750	.029
(HX5L22)	△	MDAC S-256 WRAPAROUND FIN B1F17	4.000	60.000	1.750	.029



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PANEL	LAMBDA	C/D	T/C
(HX3R10)	○	AEDC TC 273 WRAPAROUND FIN BIF18	2.000	46.900	1.000	.030
(HX3L10)	□	AEDC TC 273 WRAPAROUND FIN BIF18	4.000	46.900	1.000	.030



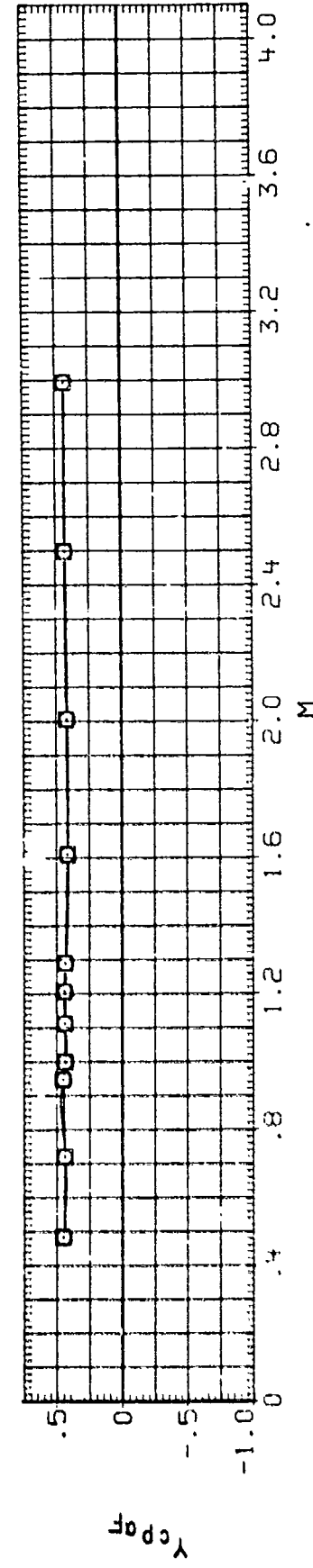
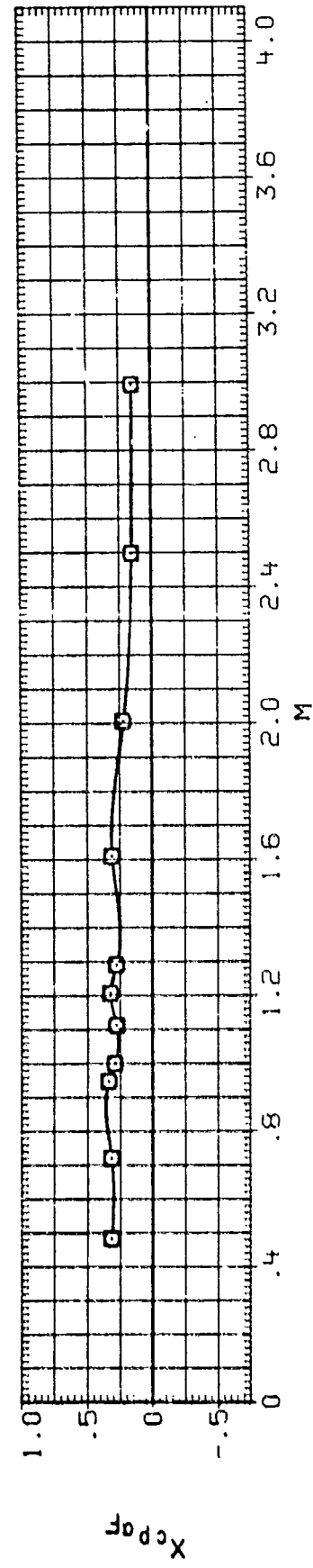
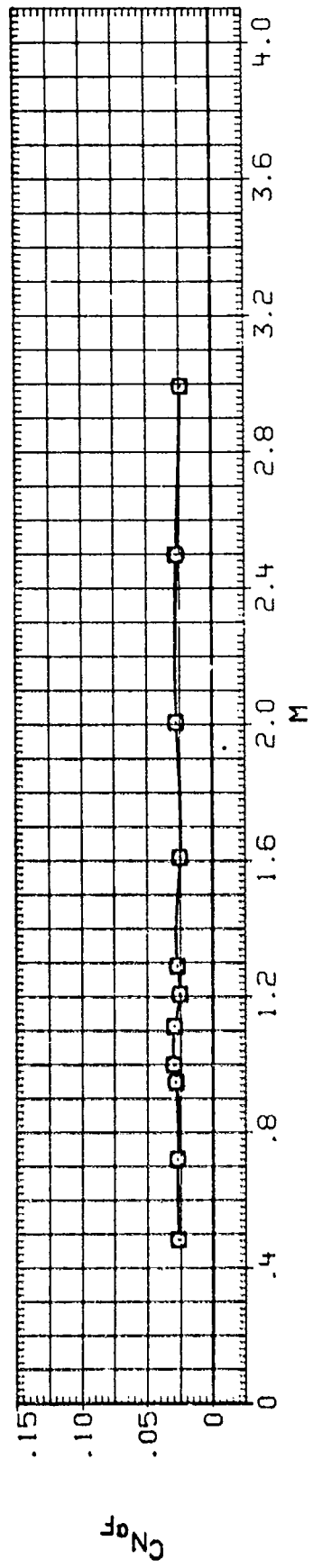
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PANEL	LAMBDA	C/D	T/C
(HX3R12)	○	AEDC TC 273 WRAPAROUND FIN B1F19	2.000	57.300	1.000	.030
(HX3L12)	□	AEDC TC 273 WRAPAROUND FIN B1F19	4.000	57.300	1.000	.030



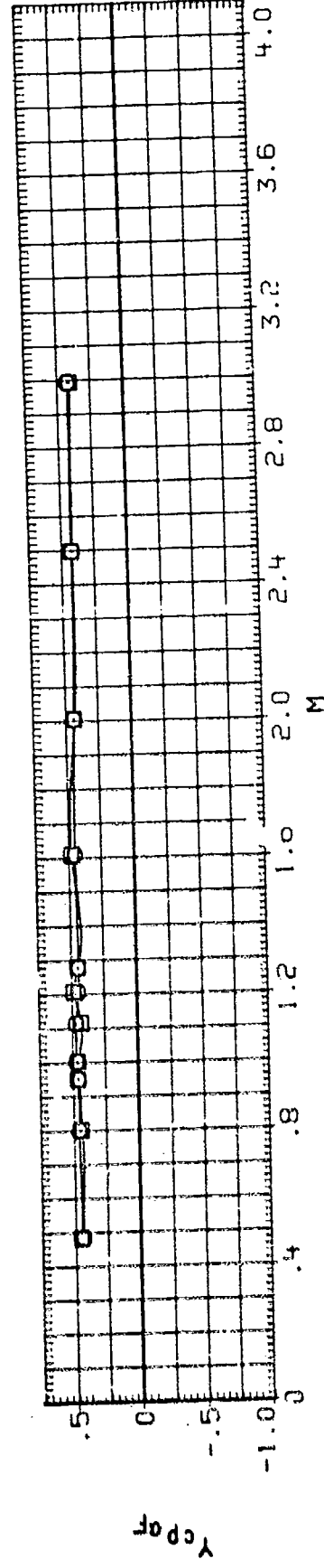
DATA SET SYMBOL CONFIGURATION DESCRIPTION

(HX5R25) ☐ MDAC S-255 WRAPAROUND FIN B1F20
 (HX5L25) ☐ MDAC S-255 WRAPAROUND FIN B1F20

PANEL LAMBDA C/D B/20
 2.000 .000 1.750 .535
 4.000 .000 1.750 .535



121B
121B

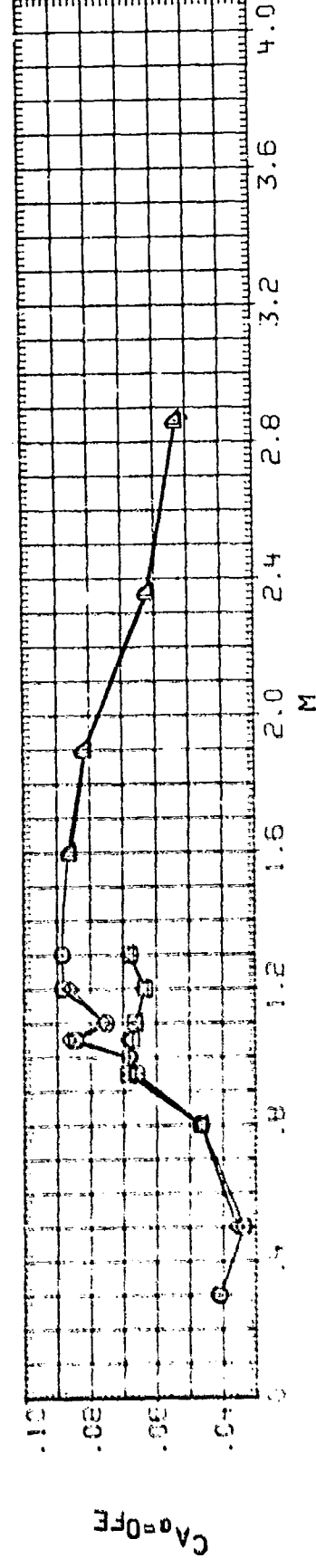
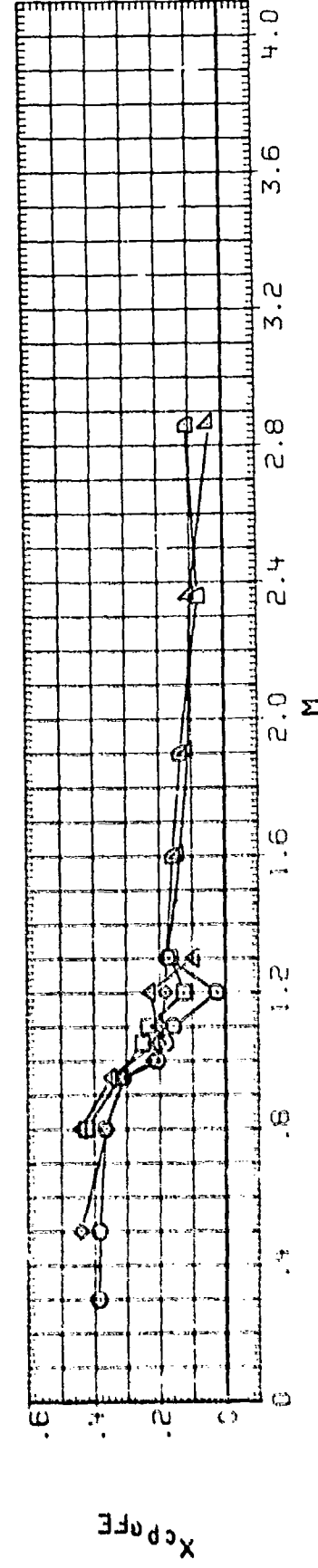
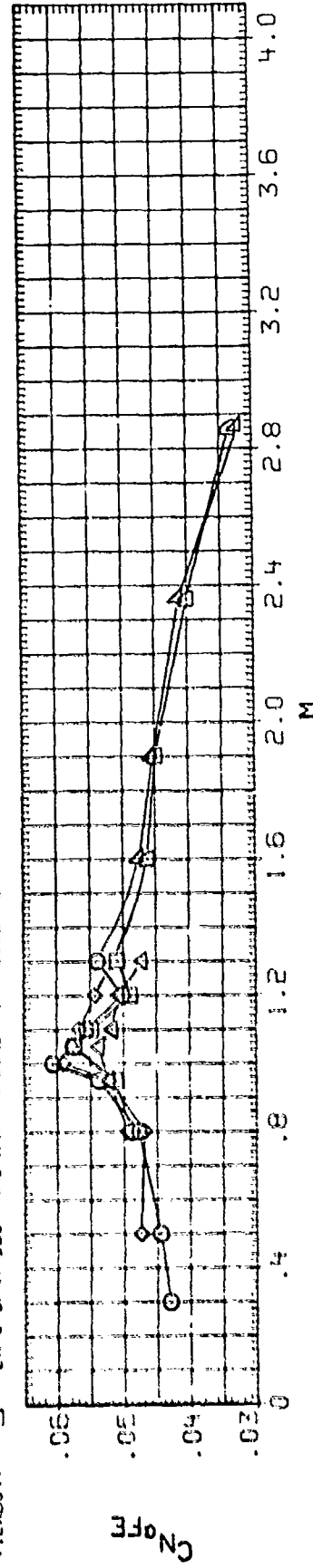


PLOTTED DATA APPENDIX C.

FIN EFFECTIVENESS

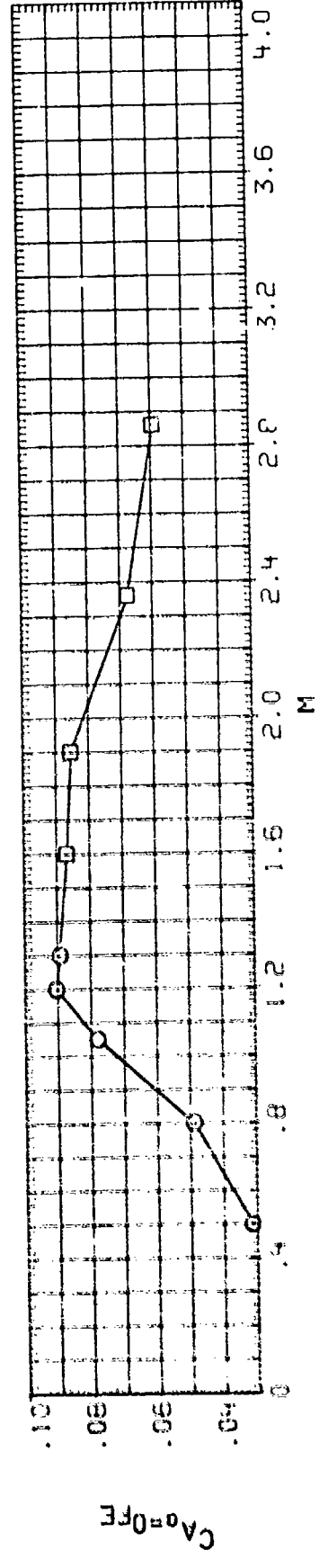
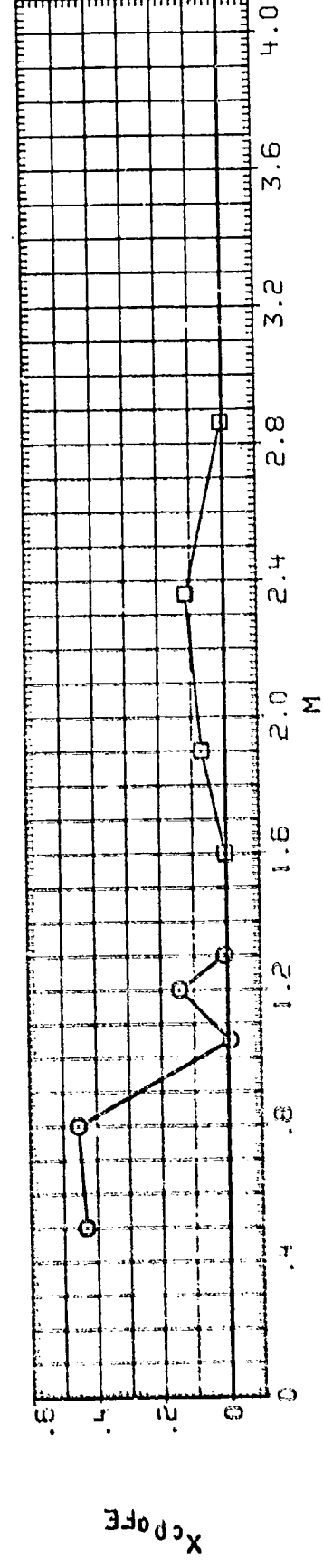
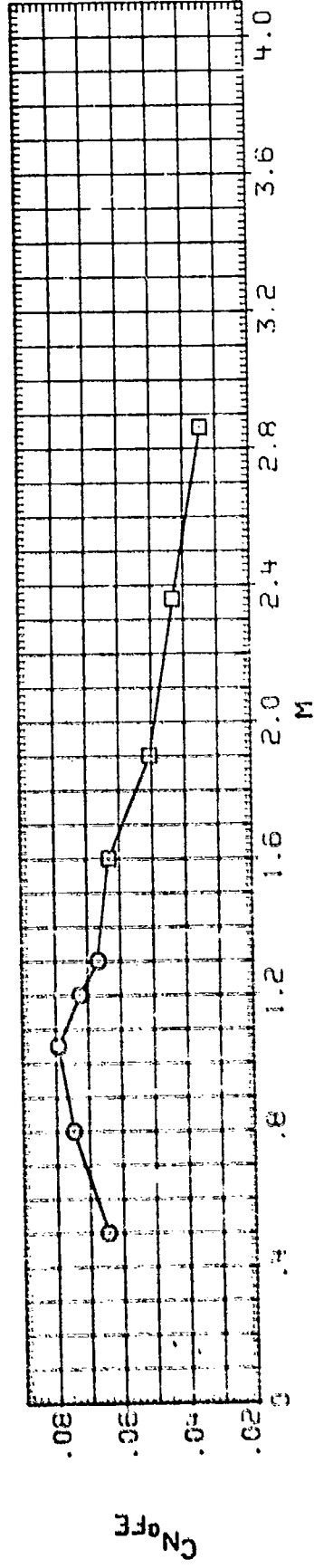
<u>CONFIGURATION</u>	<u>PAGE</u>
F1	1-1
F2	2-2
F3	3-3
F4	4-4
F5	5-5
F6	6-6
F7	7-7
F8	8-8
F9	9-9
F10	10-10
F11	11-11
F12	12-12
F13	13-13
F14	14-14
F15	15-15
F16	16-16
F17	17-17
F18	18-18
F19	19-19
F20	20-20
F21	21-21
F1	22-27
F1	28-33

Tabulations of the plotted data and corresponding source data are available from Data Management Services Operations.

[illegible]

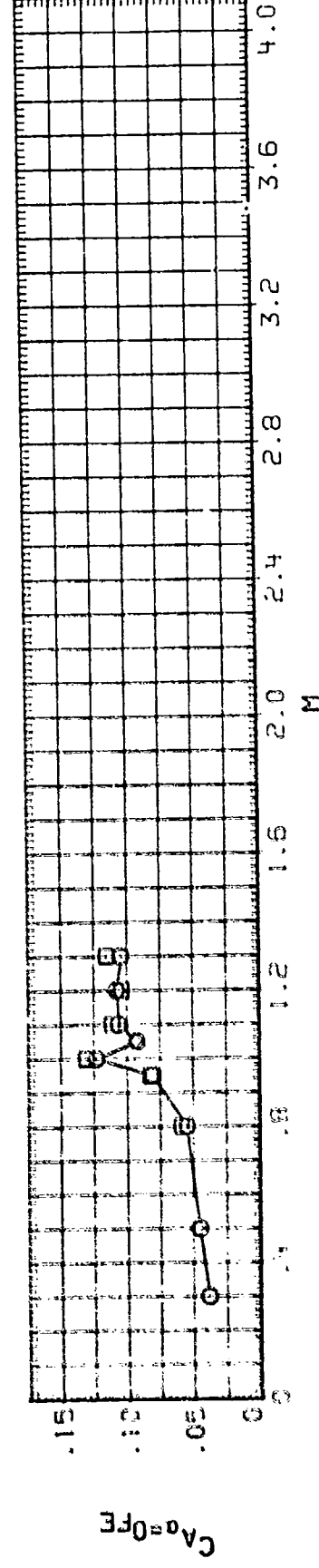
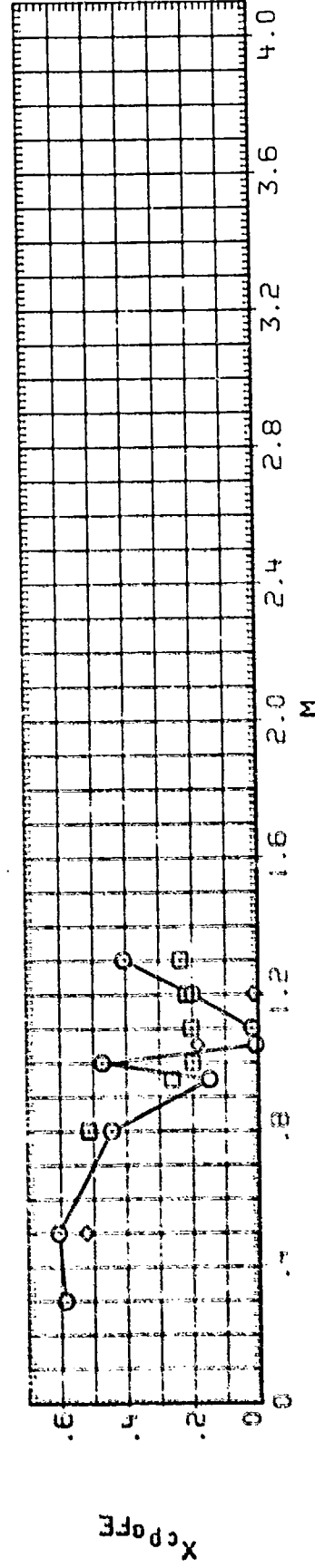
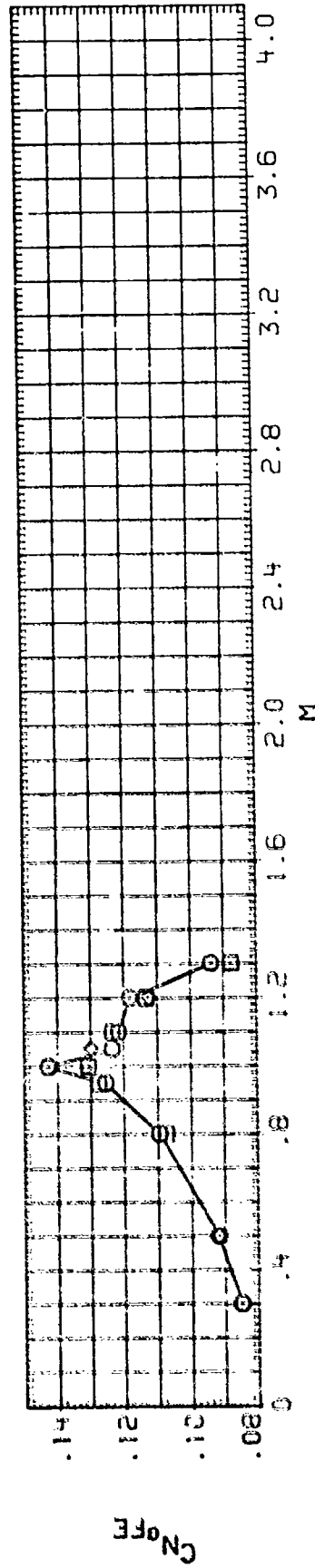
DATA SET 51500L CONFIGURATION DESCRIPTION
 1015522: 1500-1504-170-APAL FIN STUDY B1F2
 (FLUXES) 1500-1504-170-APAL FIN STUDY B1F2

PHI .000 .000
 C/D 1.000 1.000
 LAMBDA .000 .000
 B/20 .650 .650



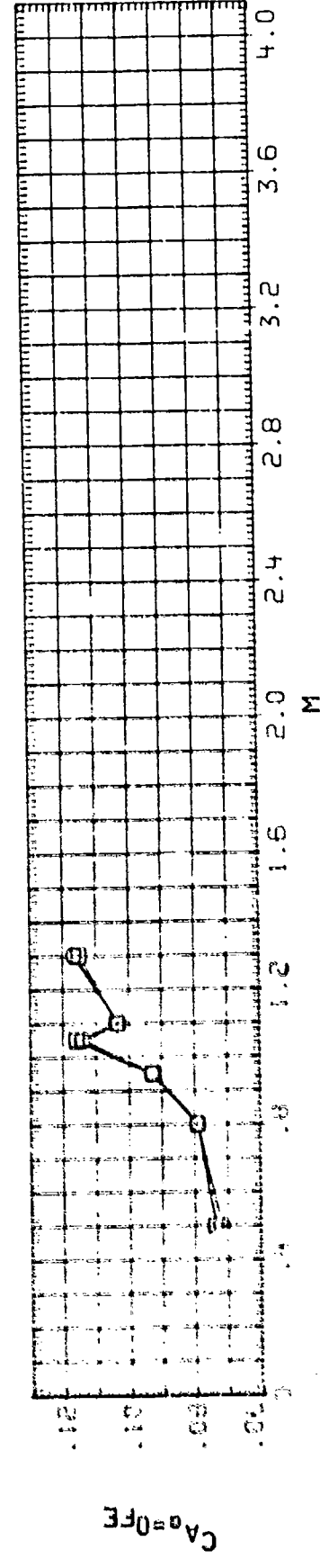
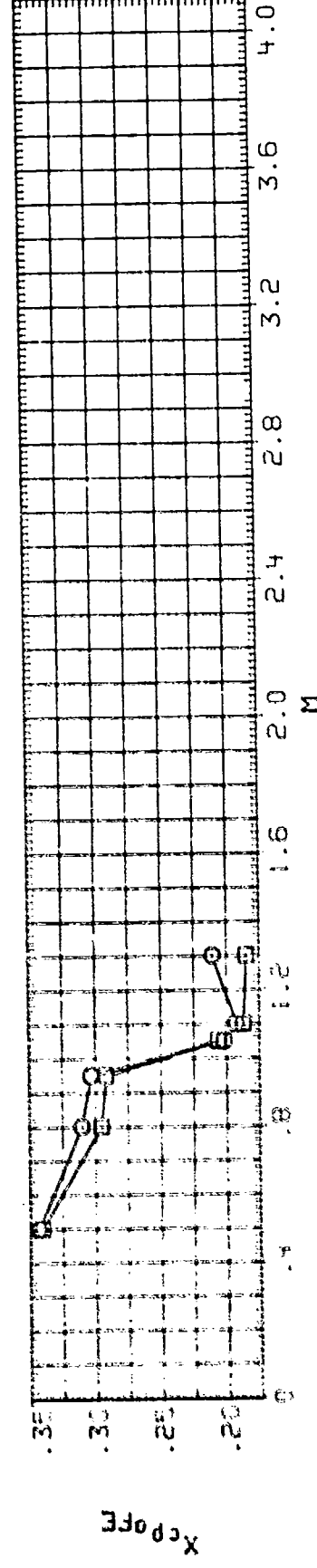
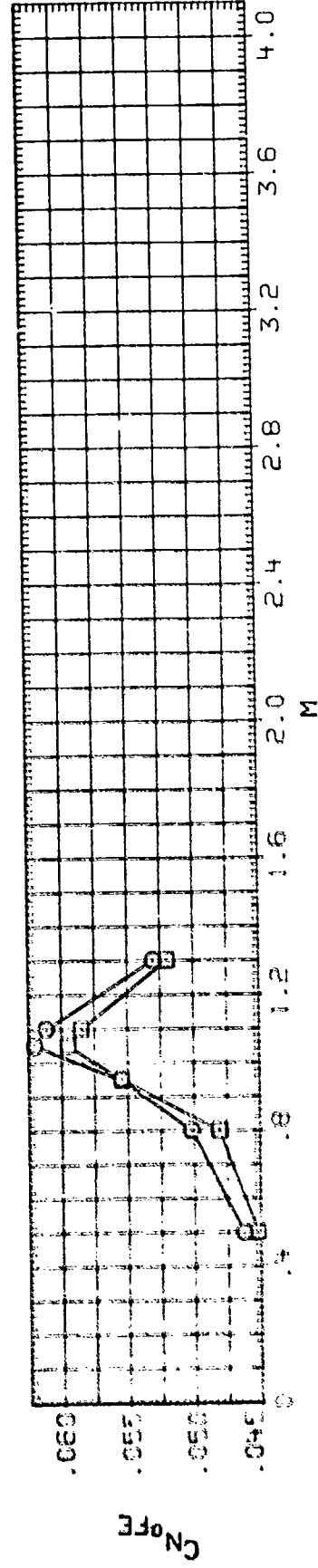
DATA SET SWE2L CONFIGURATION DESCRIPTION
 IF188141 AEDC-TC15-170 AFAPL FIN STUDY B1F3
 IF188142 AEDC-TC15-170 AFAPL FIN STUDY B1F3
 IF188143 AEDC-TC15-170 AFAPL FIN STUDY B1F3
 IF188144 AEDC-TC15-170 AFAPL FIN STUDY B1F3
 IF188145 AEDC-TC15-170 AFAPL FIN STUDY B1F3

PHI C/D LAMBOA B/2D
 .000 .500 .000 .650
 .000 .500 .000 .650
 22.500 .500 .000 .650



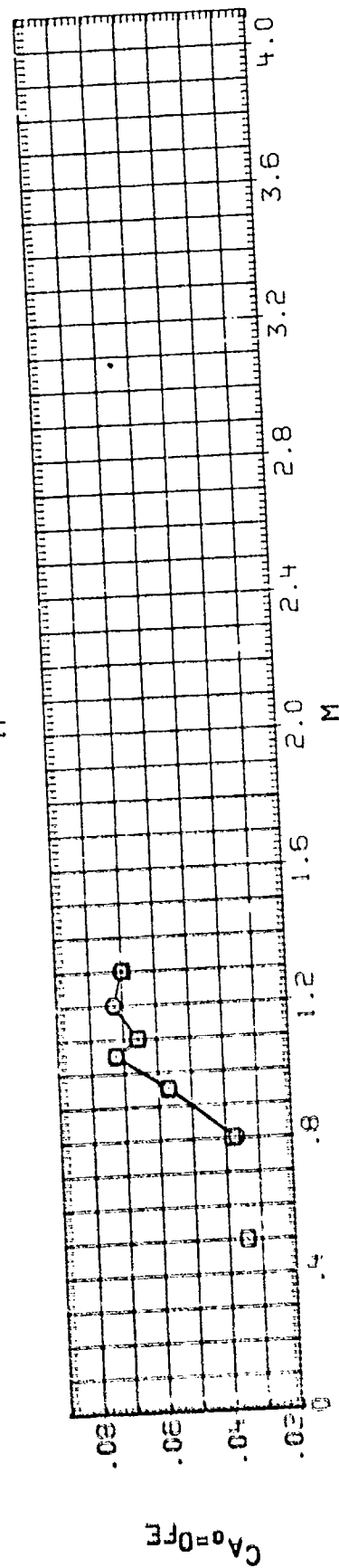
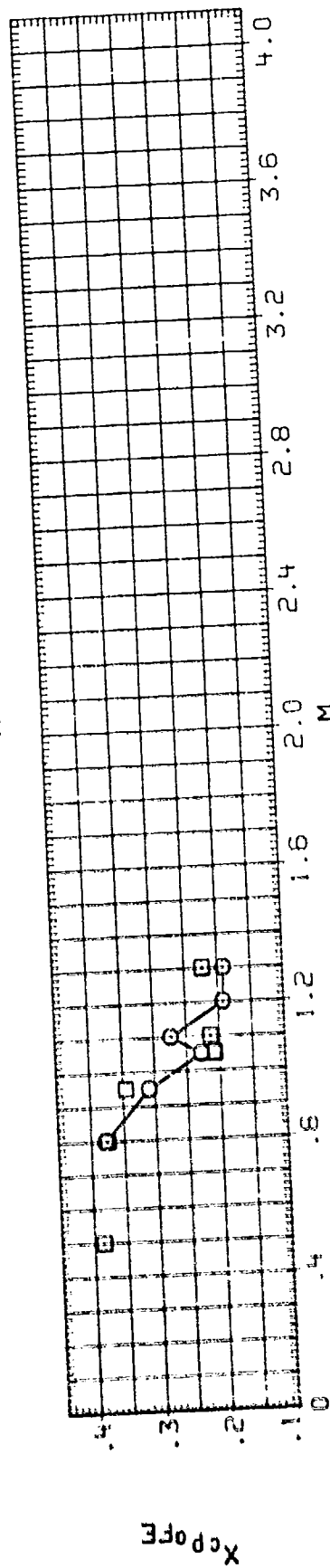
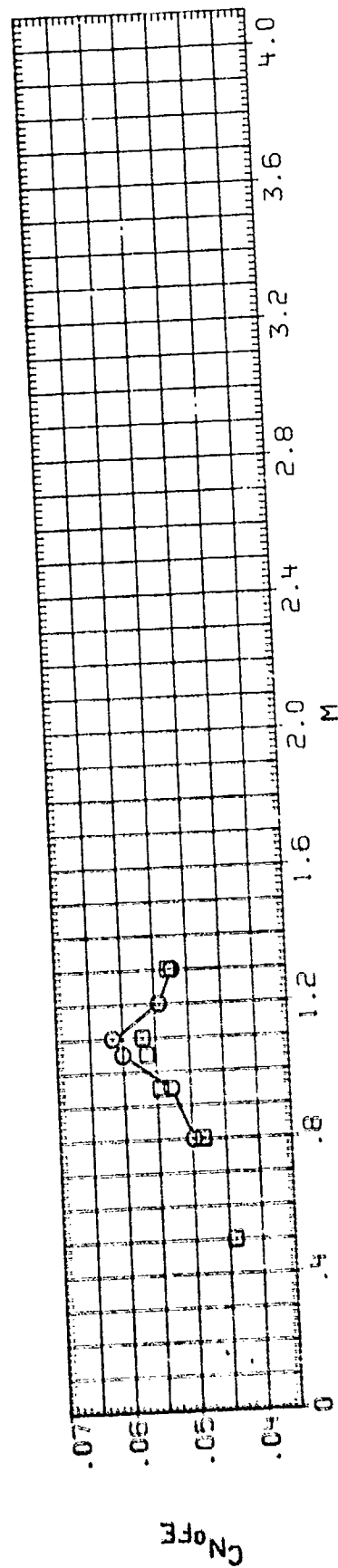
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 10:00311 O AEDC-1015W/100.00% FIN STUDY B/F4
 10:00321 O AEDC-1015W/100.00% FIN STUDY B/F4

PHI C/D LAMBDA DELTA
 .000 1.750 .000 180.000
 45.000 1.750 .000 180.000



PHI	C/D	LAMBDA	DELTA
.000	1.750	.000	20.000
.45.000	1.750	.000	20.000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 AEDC-T015-170-AFATL FIN STUDY B1F5
 AEDC-T015-170-AFATL FIN STUDY B1F5



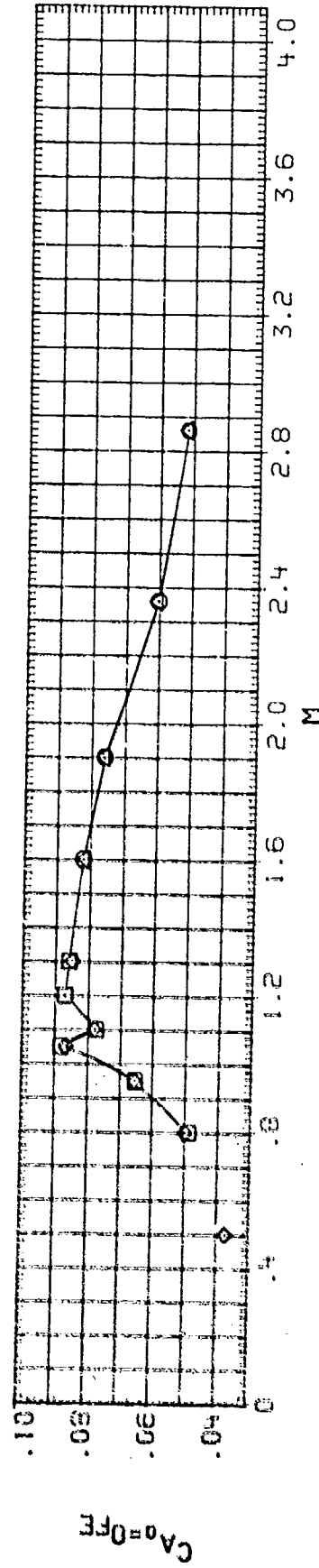
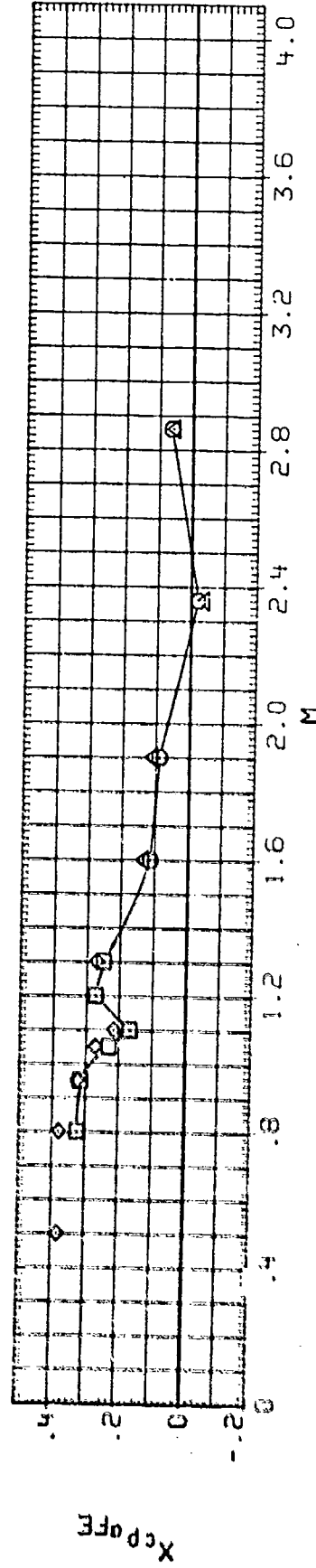
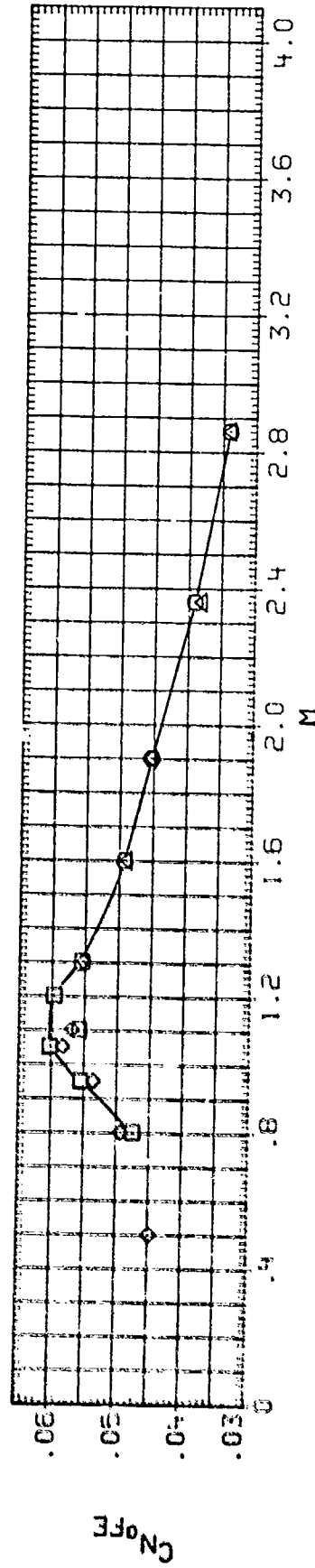
DATA SET SYMBOL CONFIGURATION DESCRIPTION PHI C/D LAMBDA DELTA

FLK8271 0.000 1.750 .000 22.500

FLK8272 0.000 1.750 .000 22.500

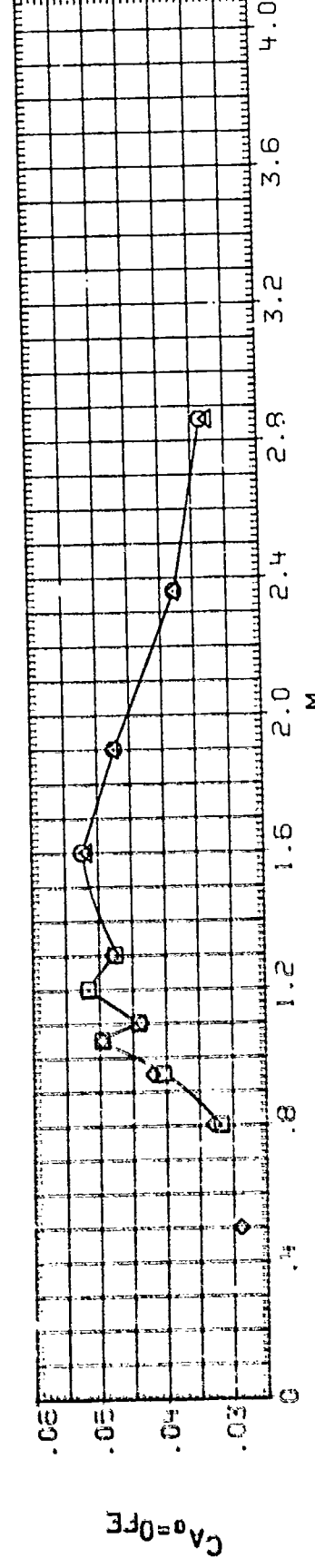
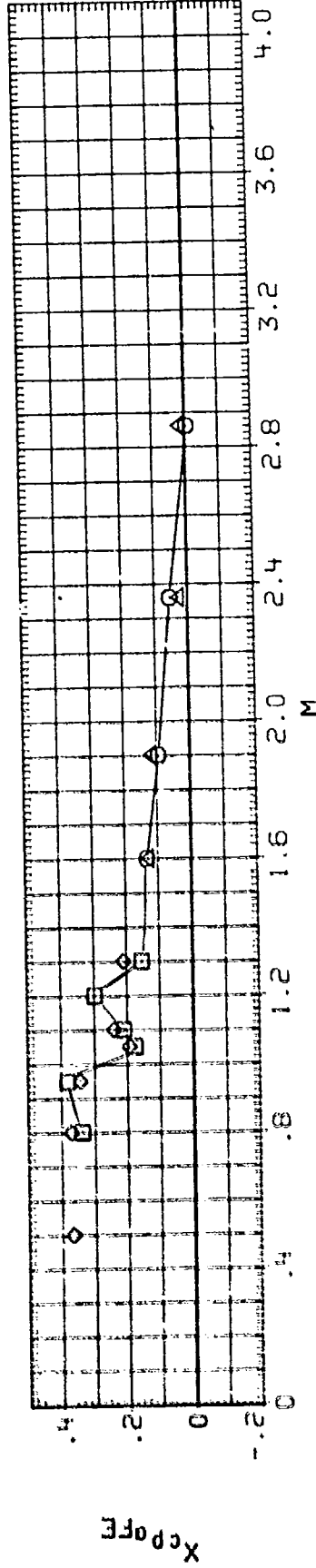
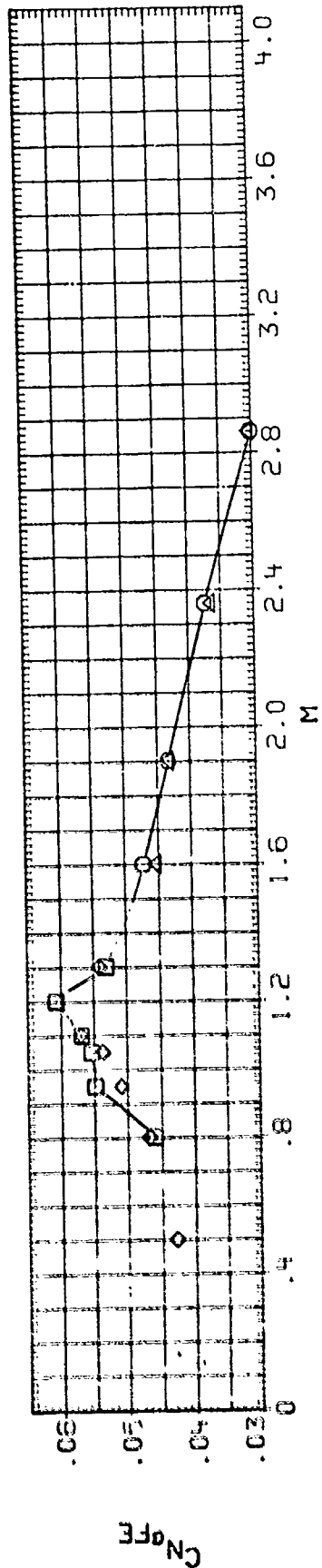
FLK8273 45.000 1.750 .000 22.500

FLK8274 45.000 1.750 .000 22.500



FIN EFFECTIVENESS - F6

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	T/C
11X81C1	LARC UPWT 583 AMC WRAP AROUND FIN MODEL B1F7	.000	1.750	.000	.015
11X81C2	AEDC-TC154/170-AFAL FIN STUDY B1F7	.000	1.750	.000	.015
11X81C3	AEDC-TC154/170-AFAL FIN STUDY B1F7	.45.000	1.750	.000	.015
11X81C4	LARC UPWT 583 AMC WRAP AROUND FIN MODEL B1F7	.45.000	1.750	.000	.015



DATA SET: SYMBOL
 (175845) 0
 (175846) 0

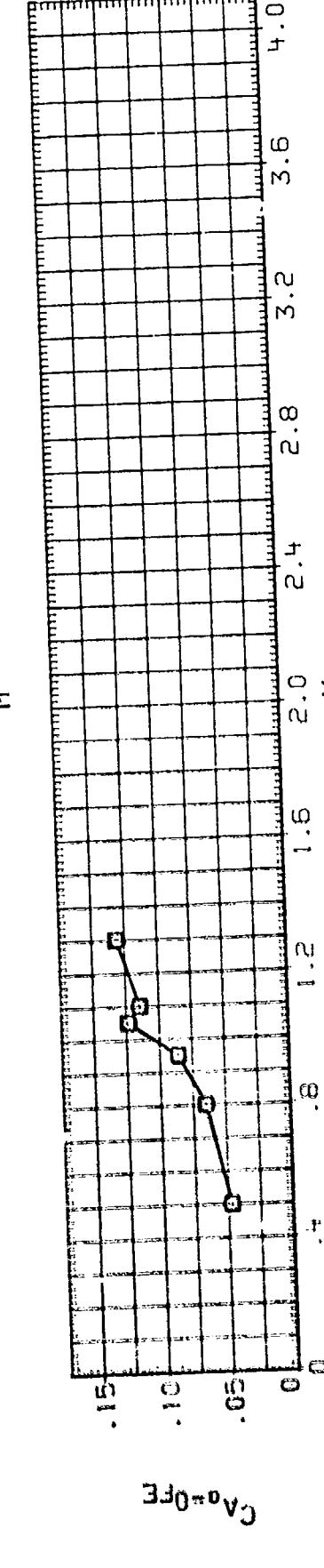
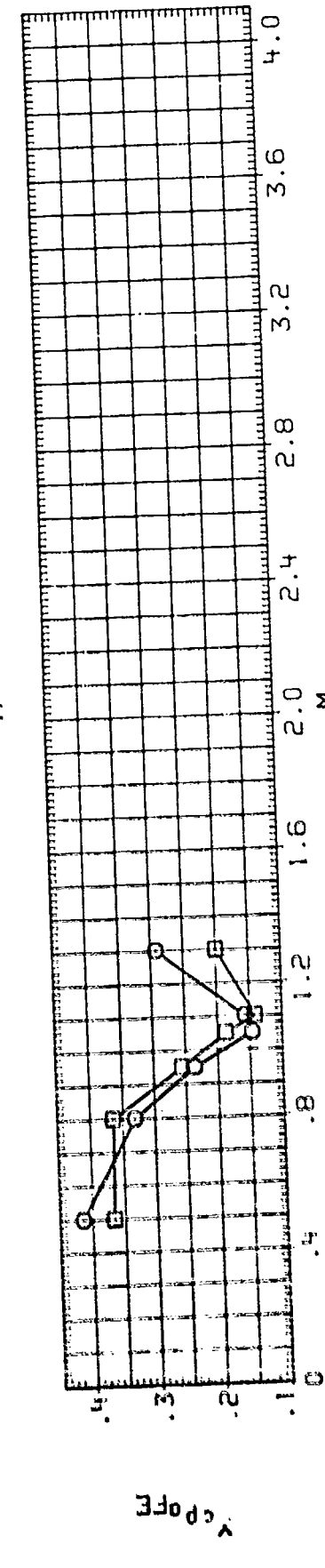
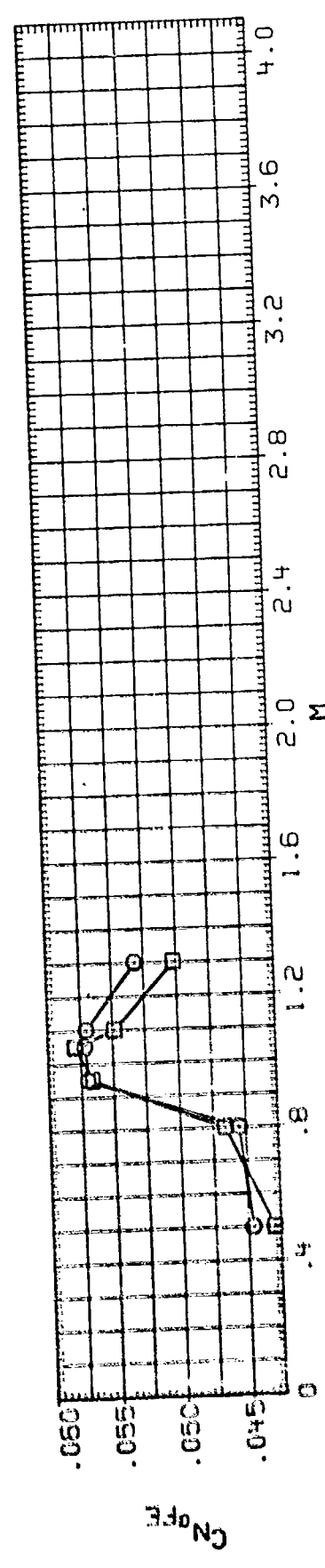
CONFIGURATION DESCRIPTION
 AEDC-1015W/170.AFATL FIN STUDY B1F8
 AEDC-1015W/170.AFATL FIN STUDY B1F8

PHI .000
 45.000

C/D 1.750
 1.750

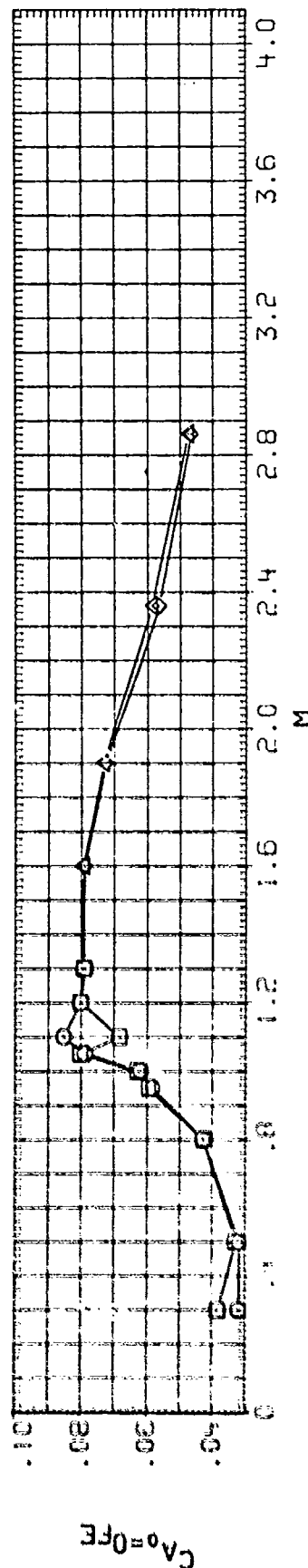
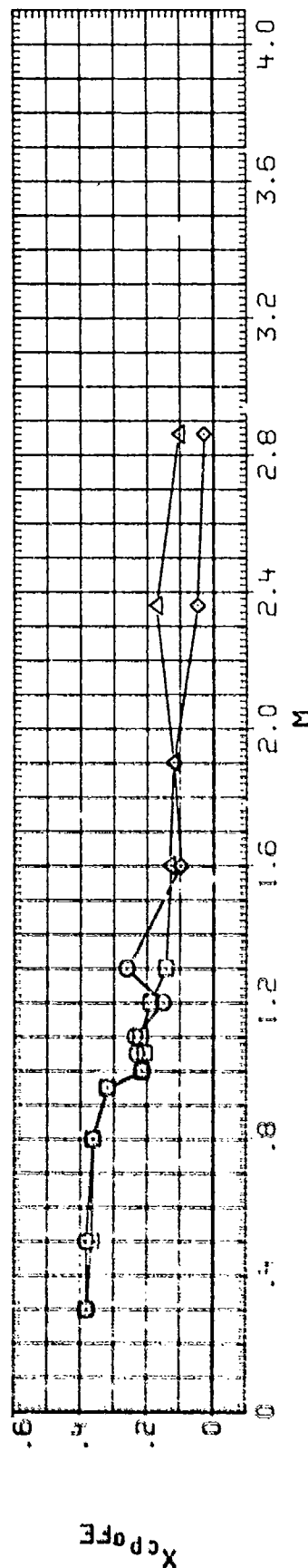
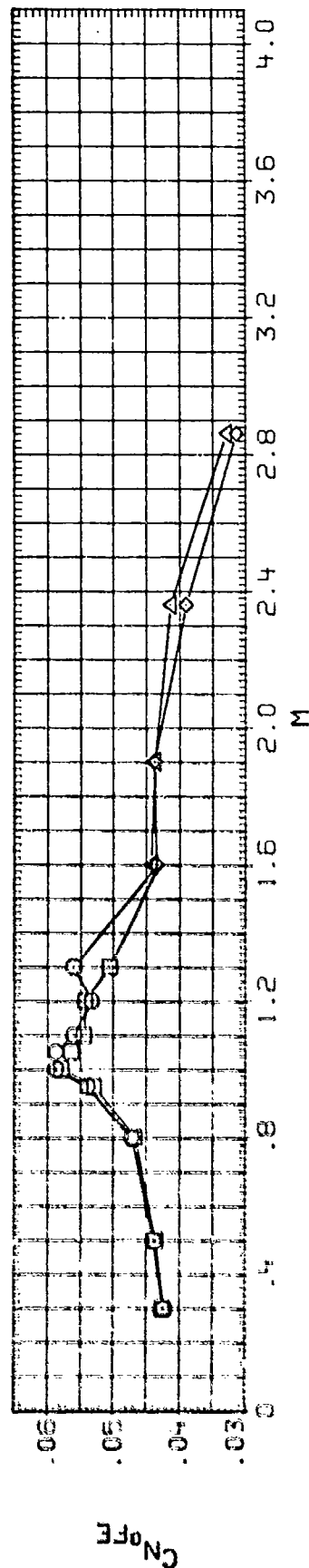
LAMBDA .000
 .000

T/C .045
 .045

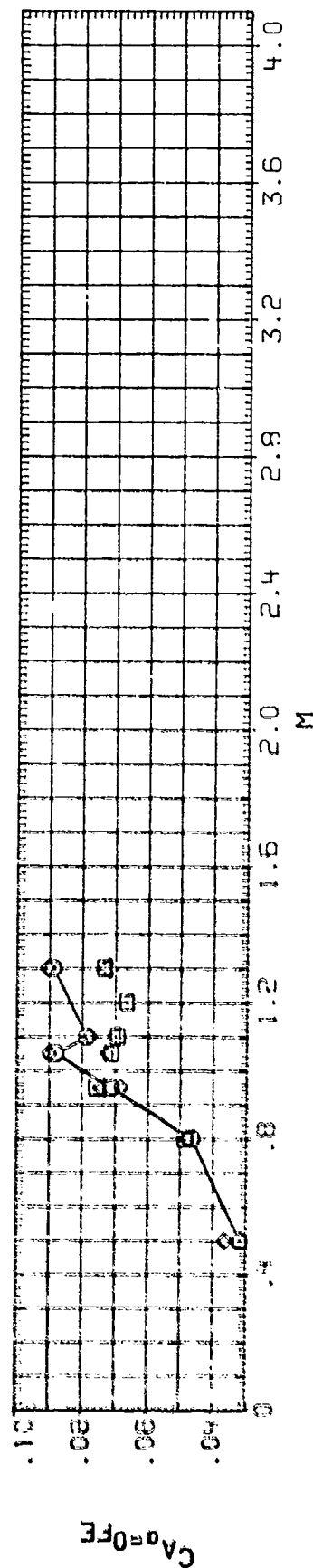
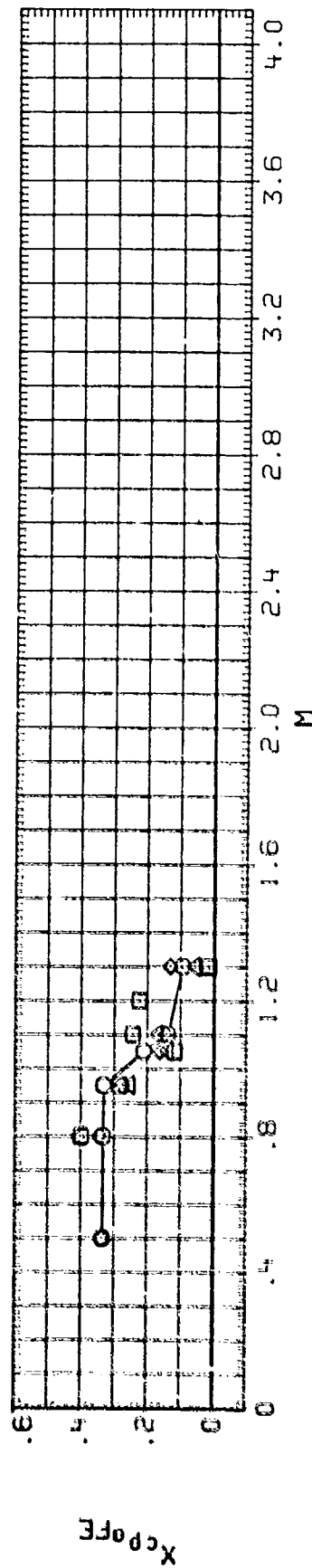
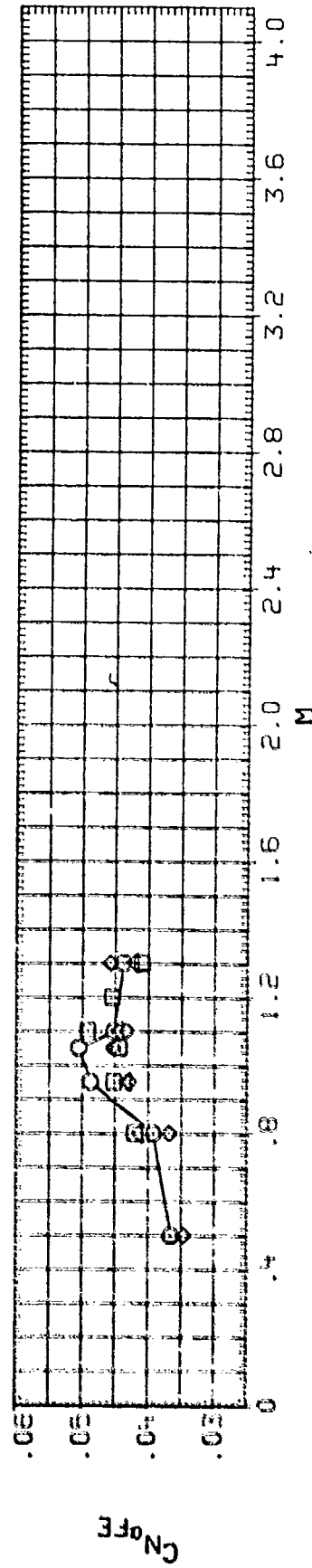


DATA SET SYMBOL CONFIGURATION DESCRIPTION PHI C/D LAMBDA B/2D

IF 00151	Q	A20C-1015-170.45A-1 FIN STUDY BIF9	.000	1.750	.000	.657
IF 00152	Q	A20C-1015-170.45A-1 FIN STUDY BIF9	.45.000	1.750	.000	.657
IF 00153	Q	LAPC 1015-170.45A-1 FIN STUDY BIF9	.000	1.750	.000	.657
IF 00154	Q	LAPC 1015-170.45A-1 FIN STUDY BIF9	.45.000	1.750	.000	.657

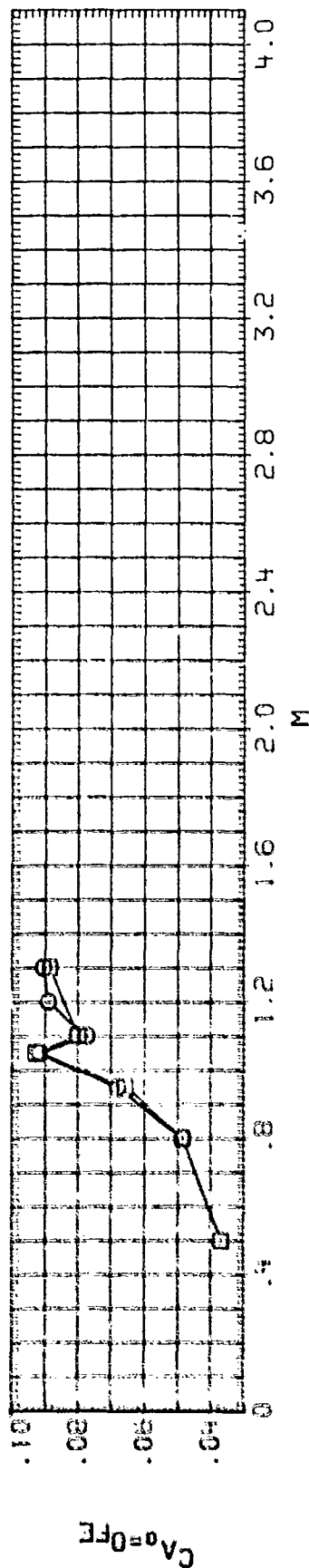
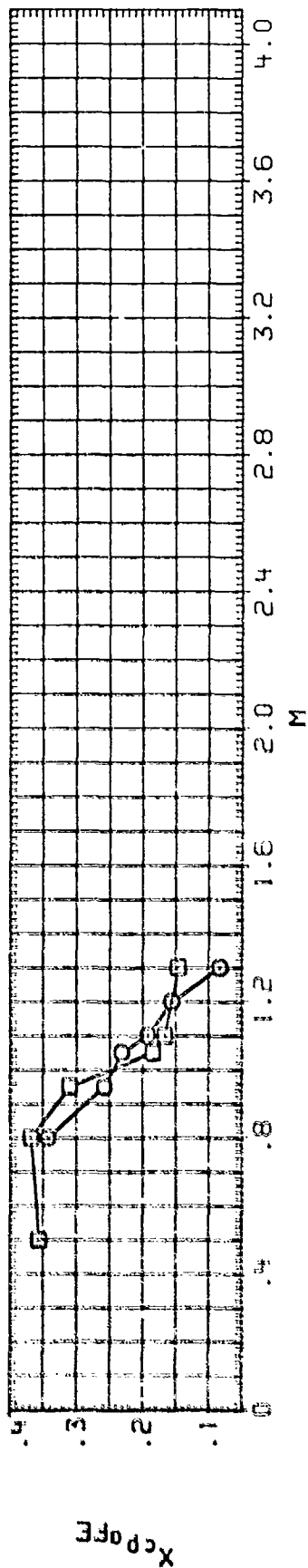
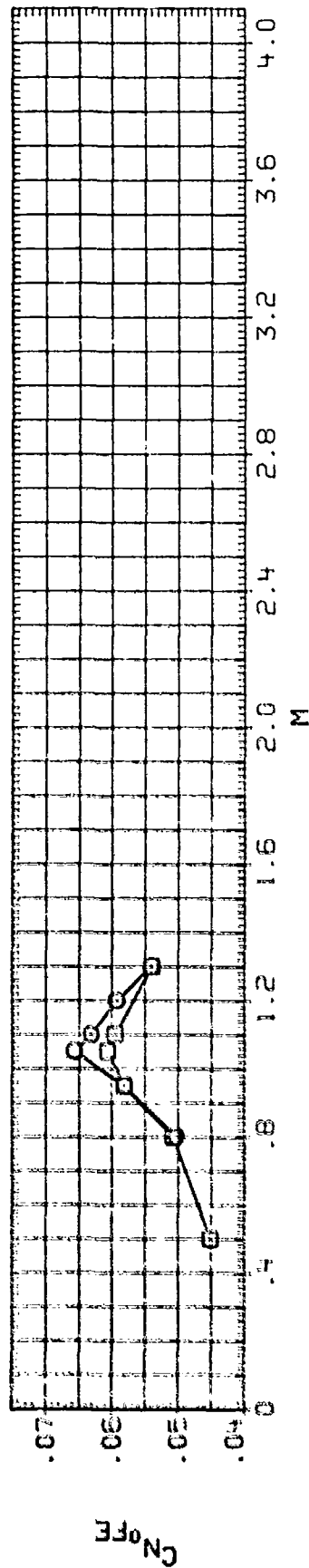


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	C/D	LAMBDA	B/2D
17-98313	○	450C-1015W/170.AFAL FIN STUDY B1F10	.000	1.750	.000	.610
17-98313	○	450C-1015W/170.AFAL FIN STUDY B2F10	.000	1.750	.000	.610
17-98313	○	450C-1015W/170.AFAL FIN STUDY B3F10	.000	1.750	.000	.610
17-98313	△	450C-1015W/170.AFAL FIN STUDY B4F10	.000	1.750	.000	.610



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (1988-7) 00 AEDC-TC154/170 AFATL FIN STUDY B1F11
 (1988-8) 00 AEDC-TC154/170 AFATL FIN STUDY B1F11

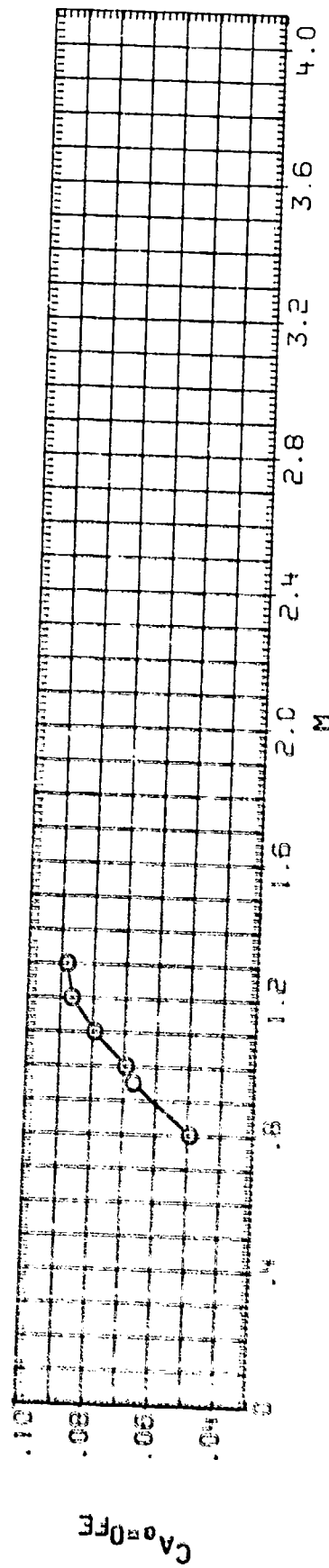
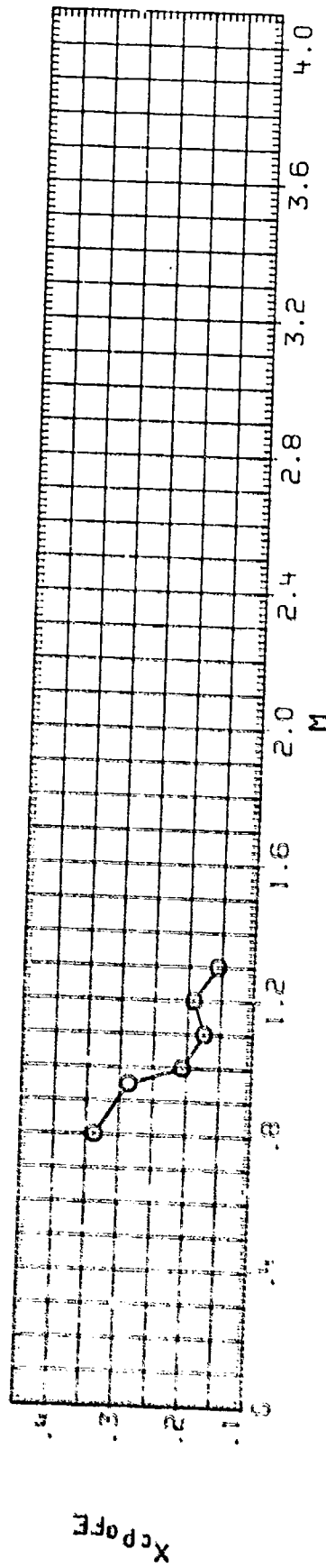
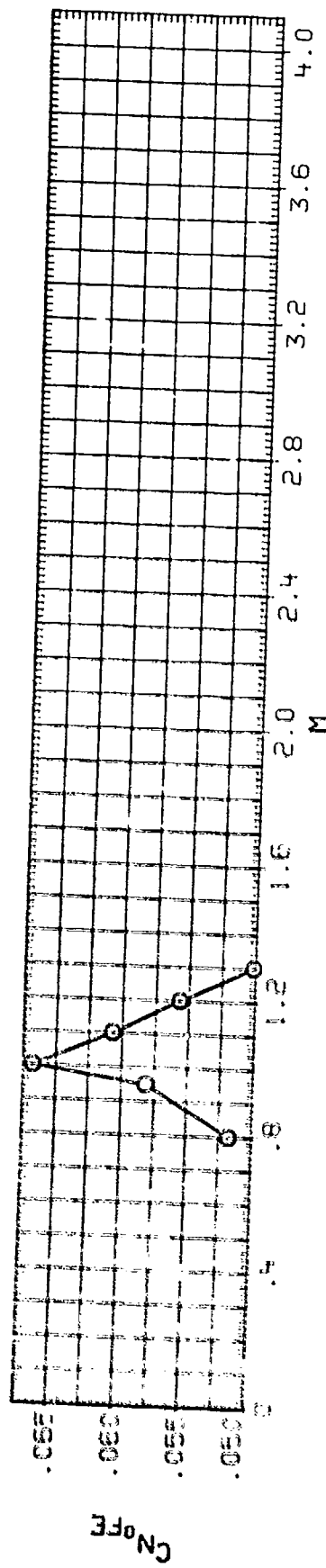
PHI C/D LAMBOA B/20
 .000 1.750 .000 .642
 45.000 1.750 .000 .642



FIN EFFECTIVENESS - F11

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 15-5223A O AEDC-TC-202. WAF FIN STUDY. SIF12

PHI .000 C/D 1.750 LAMBDA 8/20
 14.750 .657

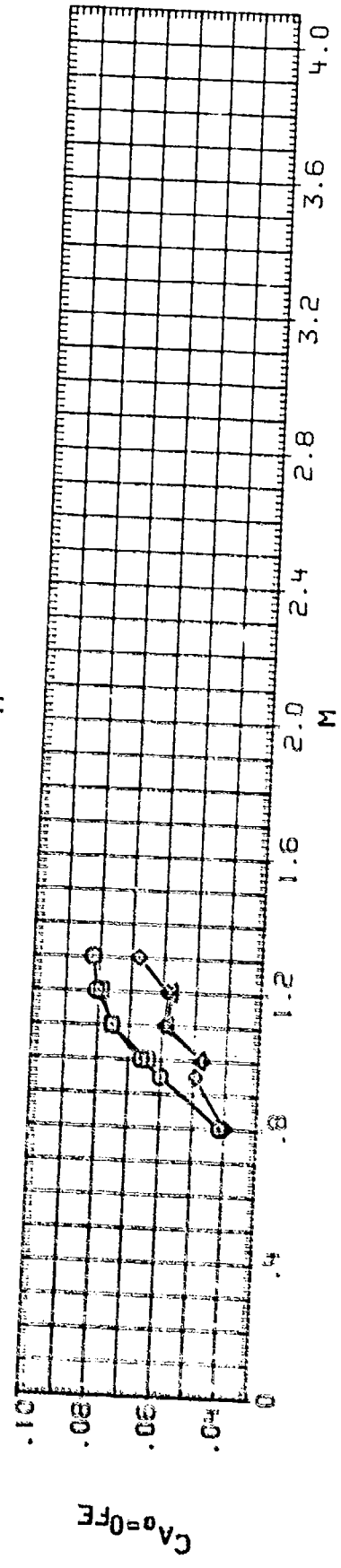
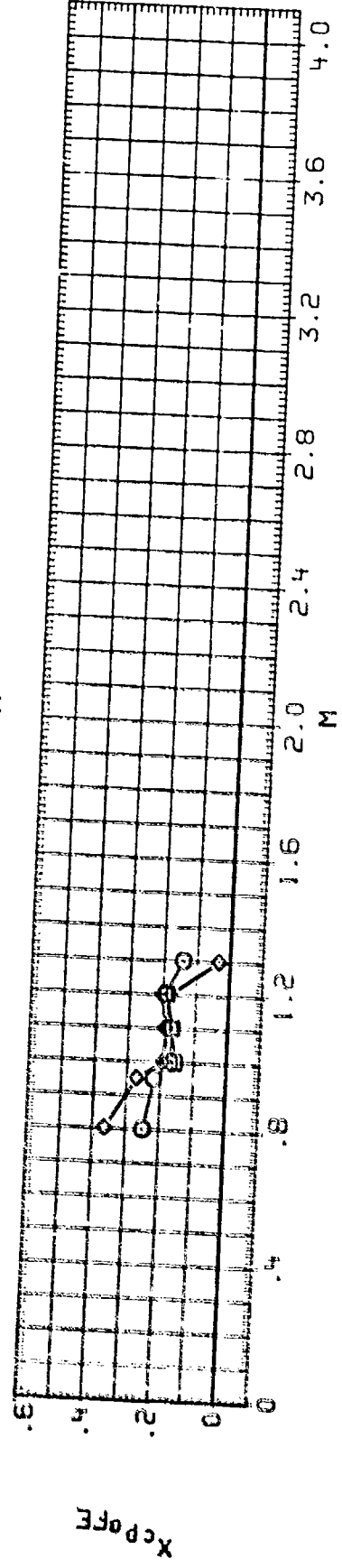
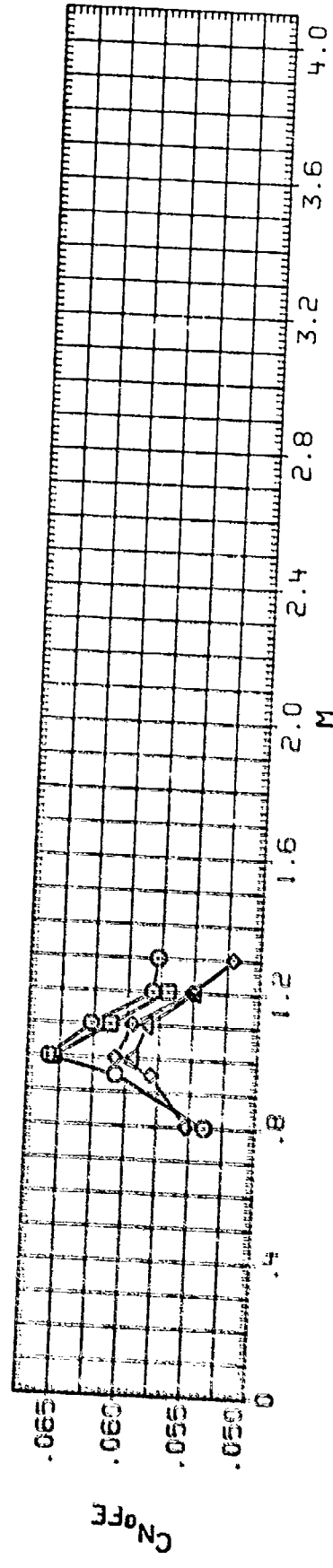


FIN EFFECTIVENESS - F12

DATA SET SYMBOL CONFIGURATION DESCRIPTION

CF0001	○	AEDC-TC-202. WAF FIN STUDY.	SIF13
CF0002	□	AEDC-TC-202. WAF FIN STUDY.	SIF13
CF0003	△	AEDC-TC-202. WAF FIN STUDY.	SIF13
CF0004	○	AEDC-TC-202. WAF FIN STUDY.	SIF13
CF0005	□	AEDC-TC-202. WAF FIN STUDY.	SIF13
CF0006	△	AEDC-TC-202. WAF FIN STUDY.	SIF13

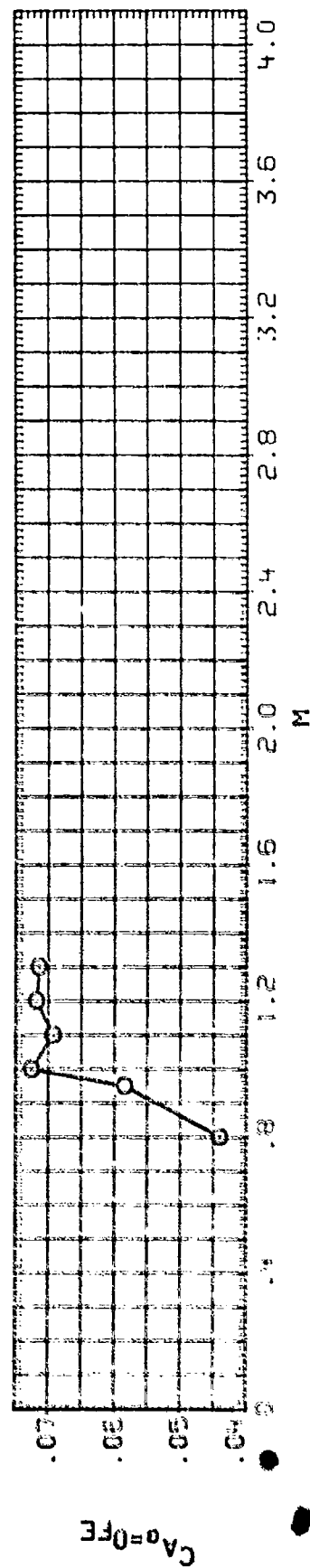
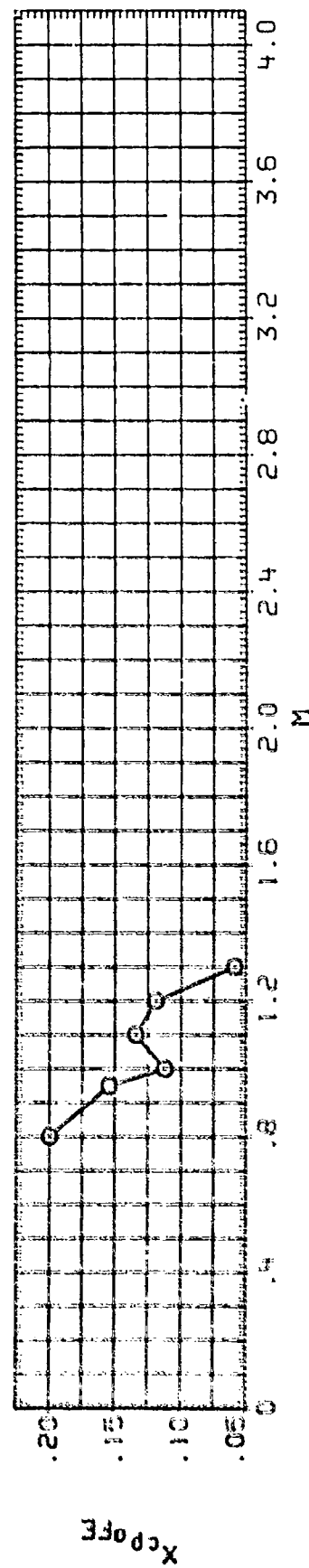
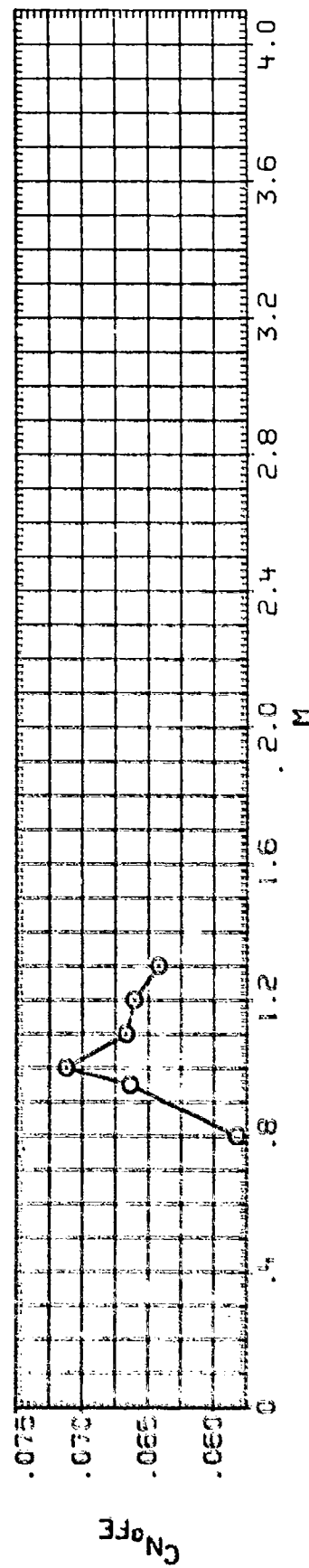
PHI	C/D	LAMBDA	B/2D
.000	1.750	33.900	.657
.45.000	1.750	33.900	.657
.45.000	1.750	33.900	.657



FIN EFFECTIVENESS - F13

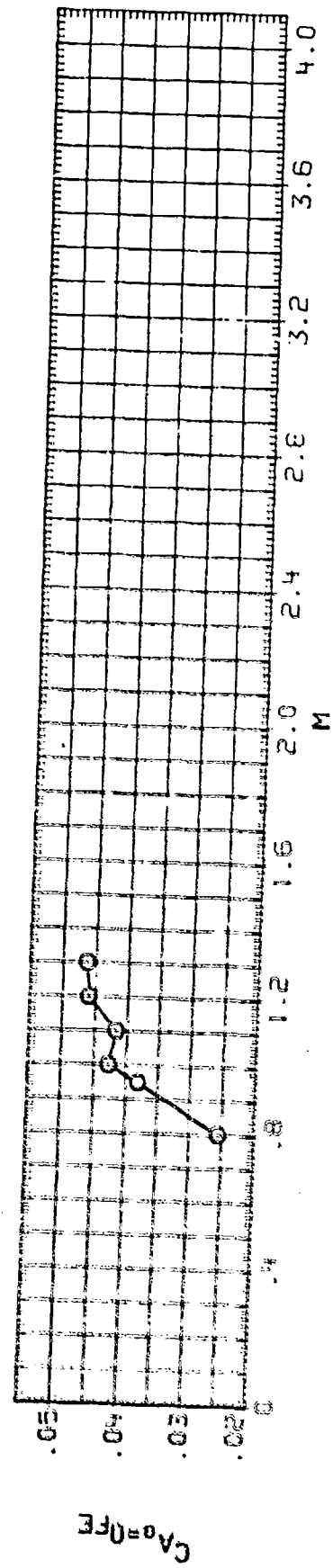
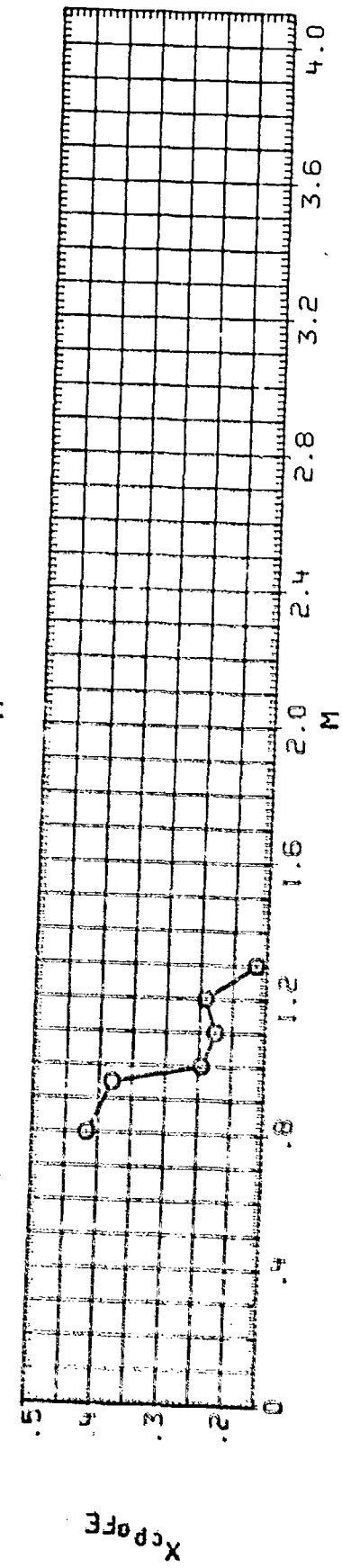
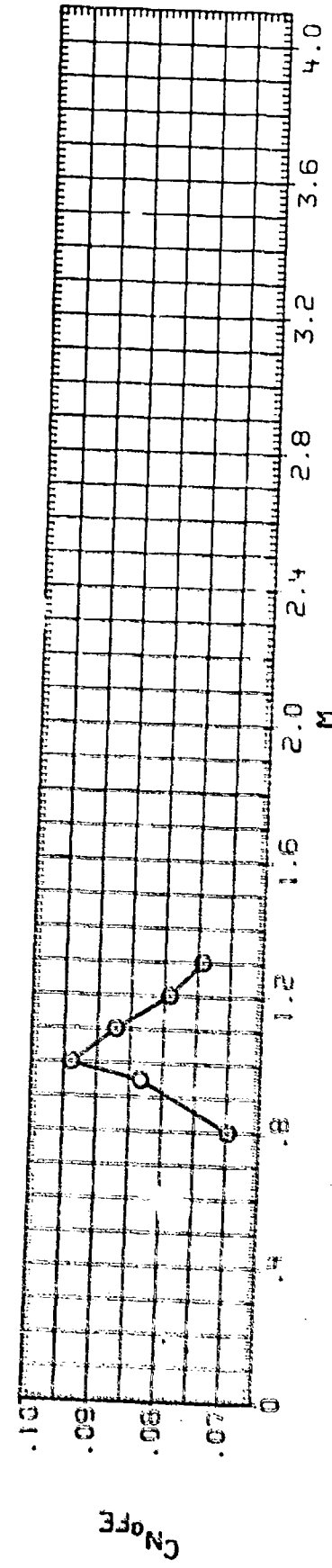
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 018337: O AEDC-TC-202, WAF FIN STUDY, B/F14

PHI C/D LAMBDA B/2D
 .000 1.750 46.900 .657



DATA SET SYMBOL CONFIGURATION DESCRIPTION
1F-BE111 O AGOC-C-202. WAF FIN STUDY. SIF15

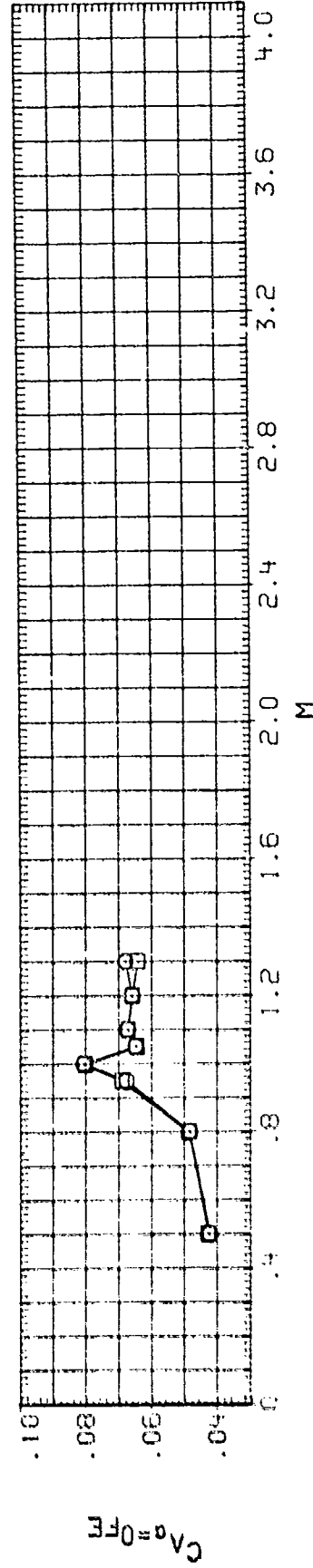
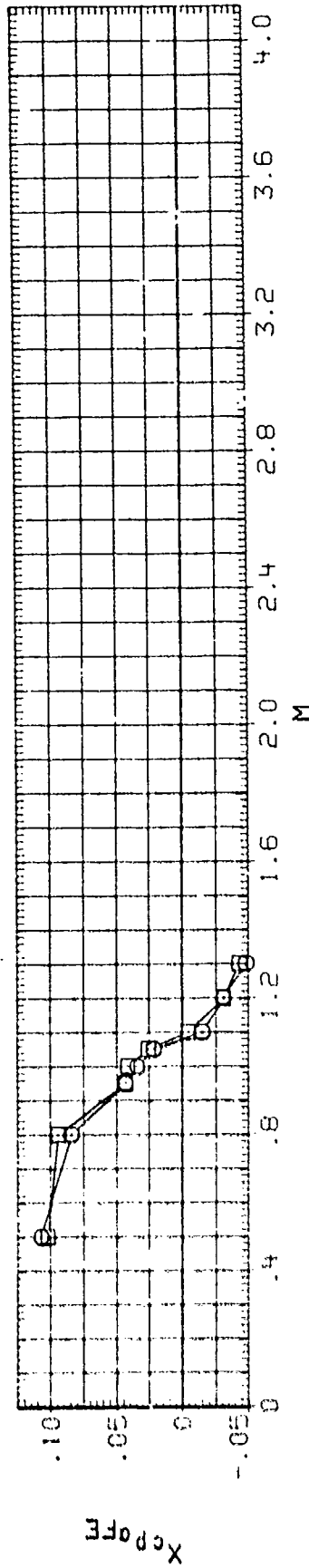
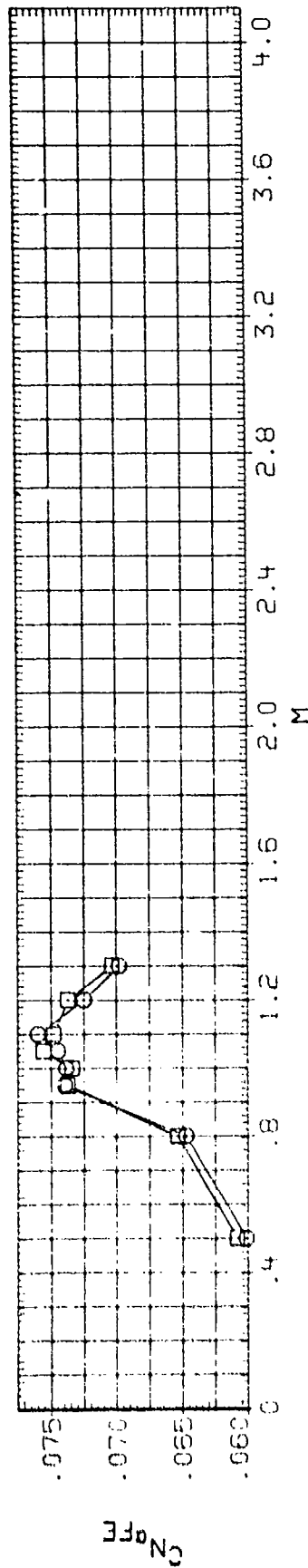
PHI .000 C/D 1.000 LAMBDA .000 T/C .010



FIN EFFECTIVENESS - F15

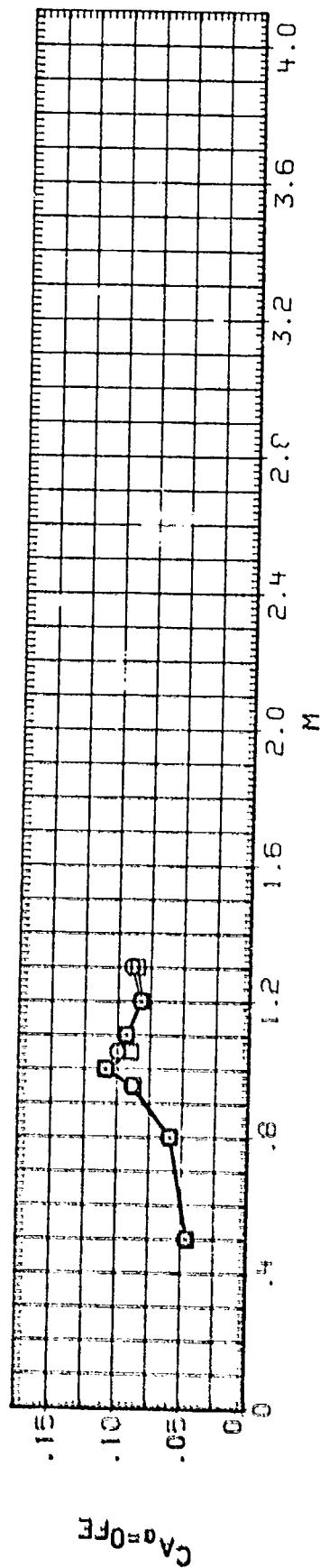
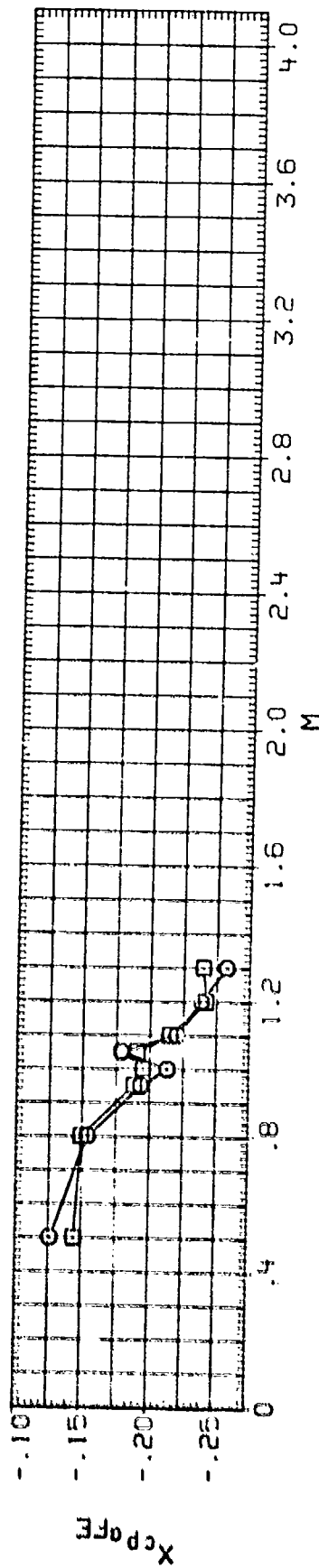
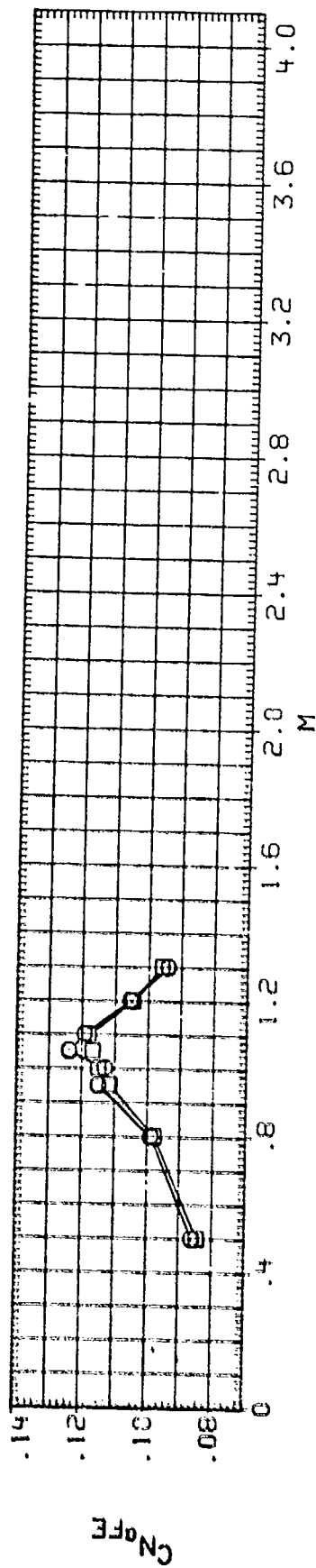
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (JX3208) ○ RY208 - R*9201, B*F17 - B;
 (JX3509) □ RY209 - R*9201, B*F17 - B

PHI C/O LAMBOA B/20
 .000 1.750 50.000 .657
 45.000 1.750 60.000 .657



DATA SET: SYMBOL CONFIGURATION DESCRIPTION
 (JX39:0) C RX39:0 - RISE01, 81F18 - B1
 (JX39:1) D RX39:1 - RISE01, 81F18 - B1

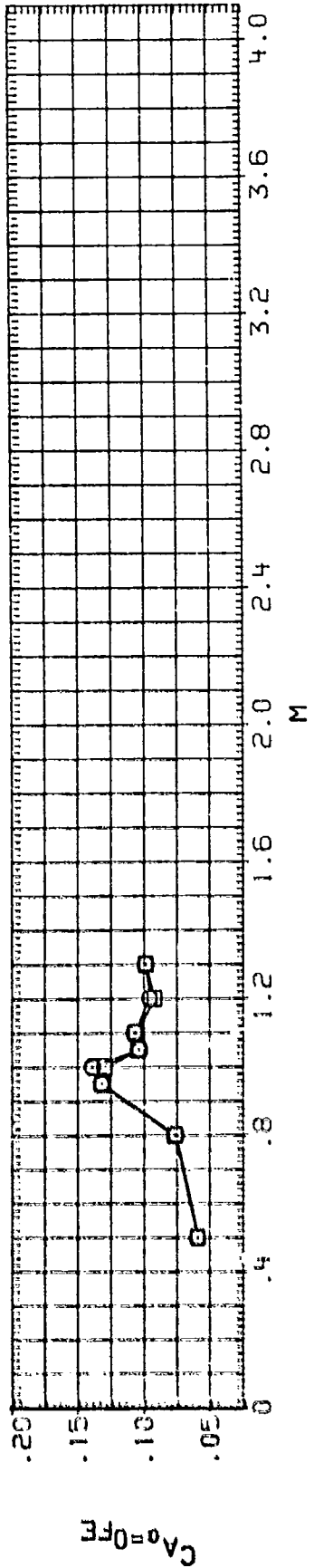
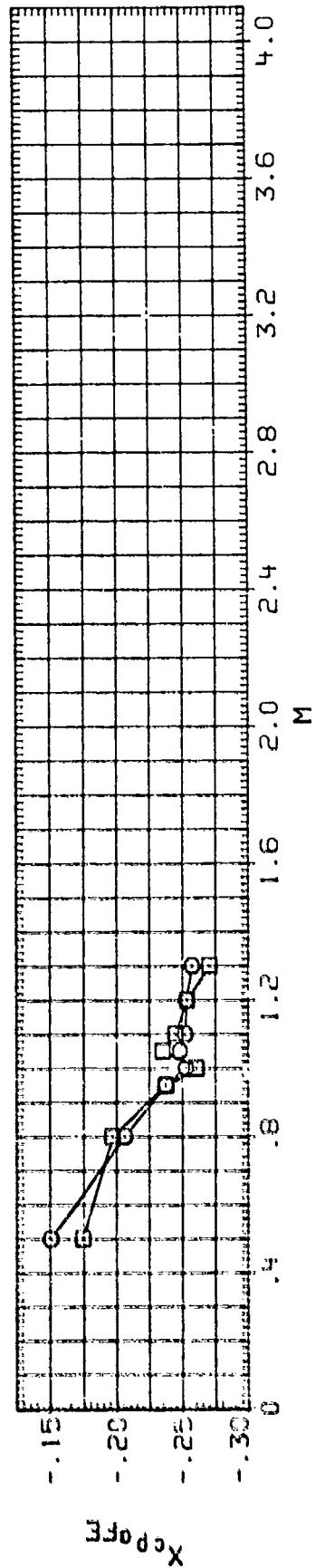
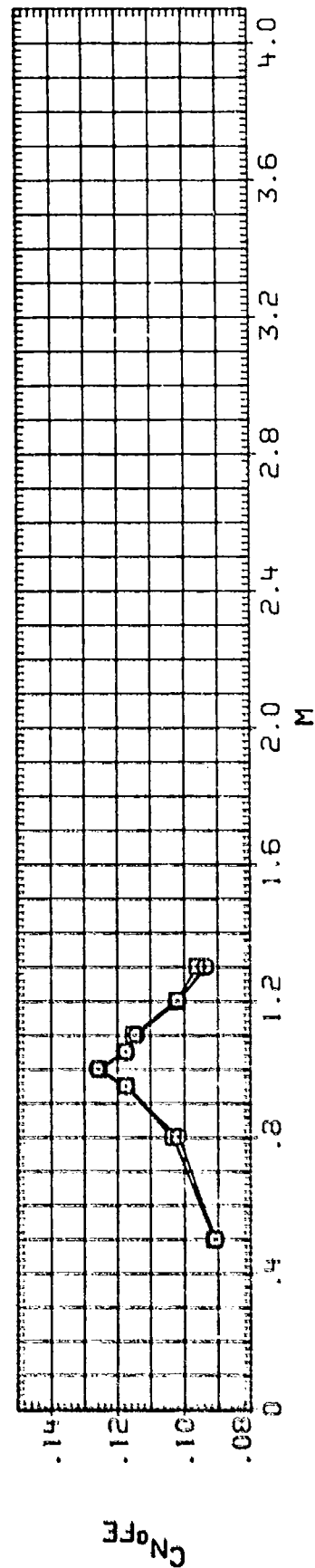
PHI C/D LAMBDA B/2D
 .000 1.000 46.900 .653
 45.000 1.000 46.900 .653



FIN EFFECTIVENESS - F18

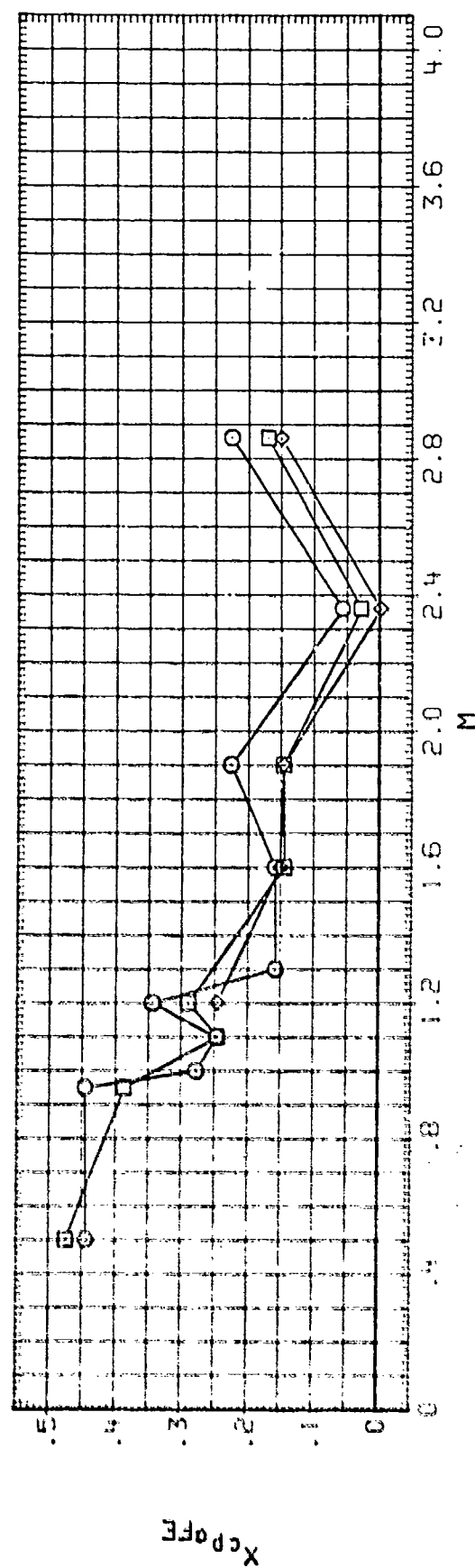
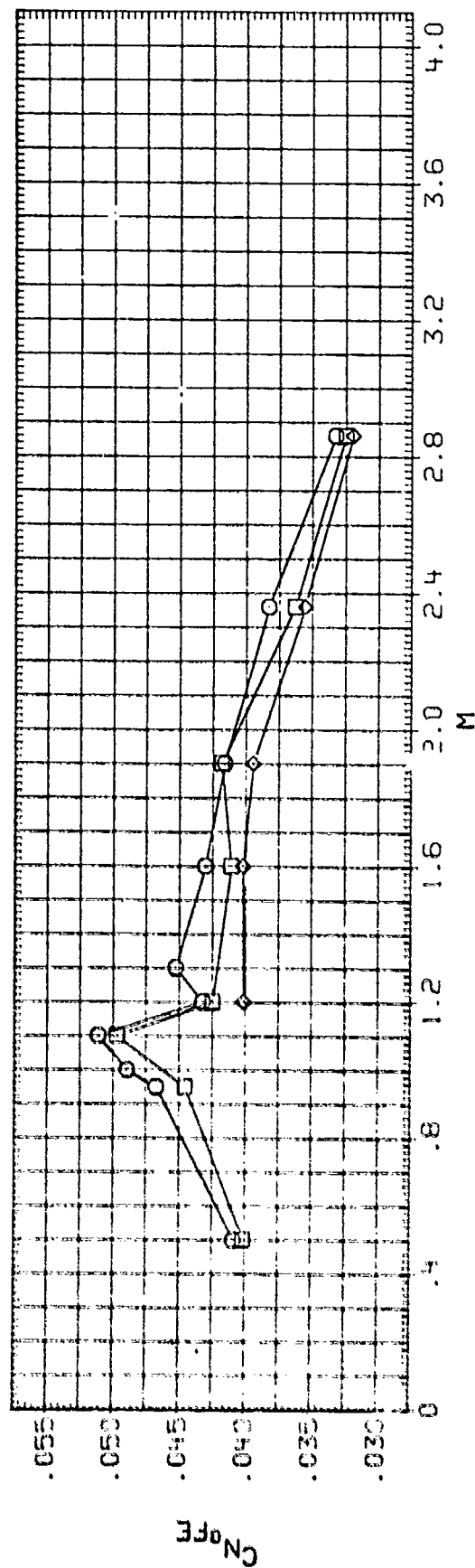
DATA SET SYMOL CONFIGURATION DESCRIPTION
 1JX12:12 - R'9501. BIF19 - B1
 1JX12:13 - R'9501. BIF19 - B1

PHI C/D LAMBDA B/20
 .000 1.000 57.300 .638
 45.000 1.000 57.300 .538



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (FX5225) ○ RW525 - A19201, B1F23-B1
 (FX5226) ○ RW526 - A19201, B1F23-B1
 (FX5227) ○ RW527 - A19201, B1F23-B1

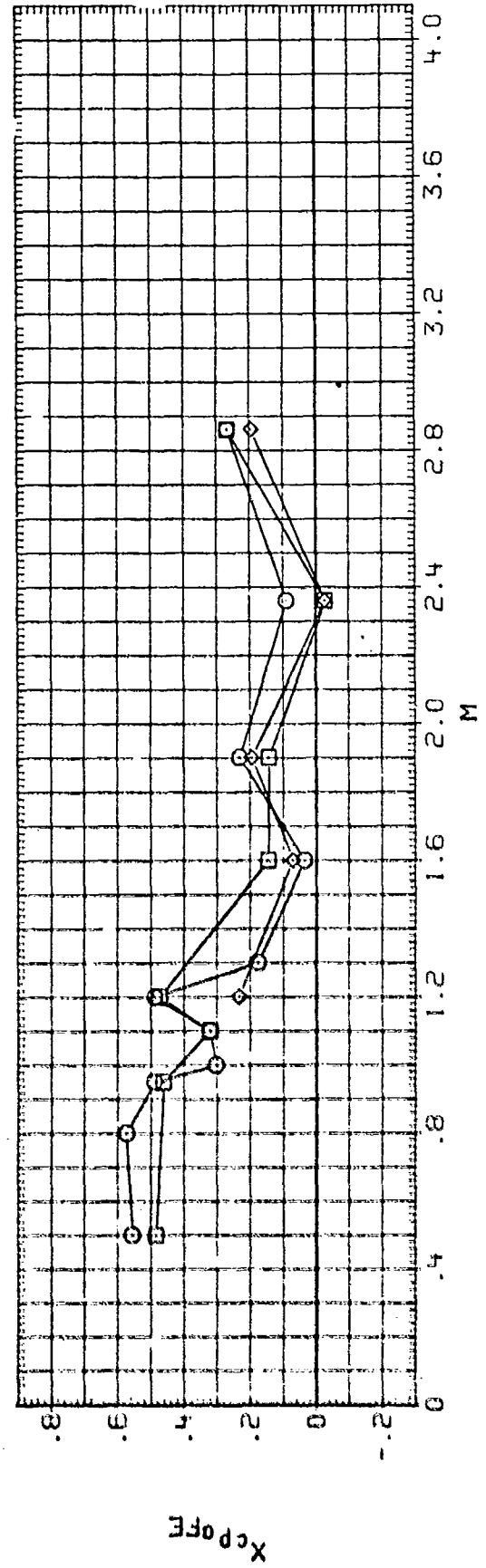
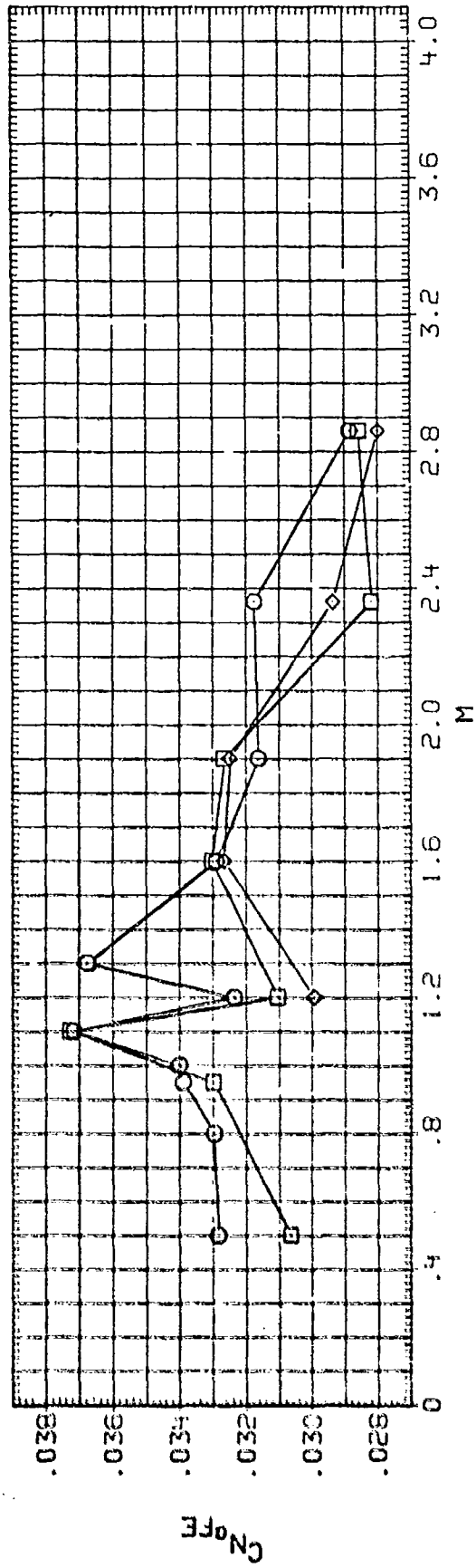
PHI C/D LAMBDA B/2D
 .000 1.750 .000 .535
 22.500 1.750 .000 .535
 45.000 1.750 .000 .535



FIN EFFECTIVENESS - F20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (FX5229) O A19501, B1F21-81
 (FX5229) □ A19501, B1F21-91
 (FX5229) ◇ A19501, B1F21-91

PHI C/D LAMBDA B/2D
 .000 1.750 .000 .348
 22.500 1.750 .000 .348
 45.000 1.750 .000 .348



(FX5B01) MDAC S 256 INTERPOLATED MACH NO., B1.1 - B1

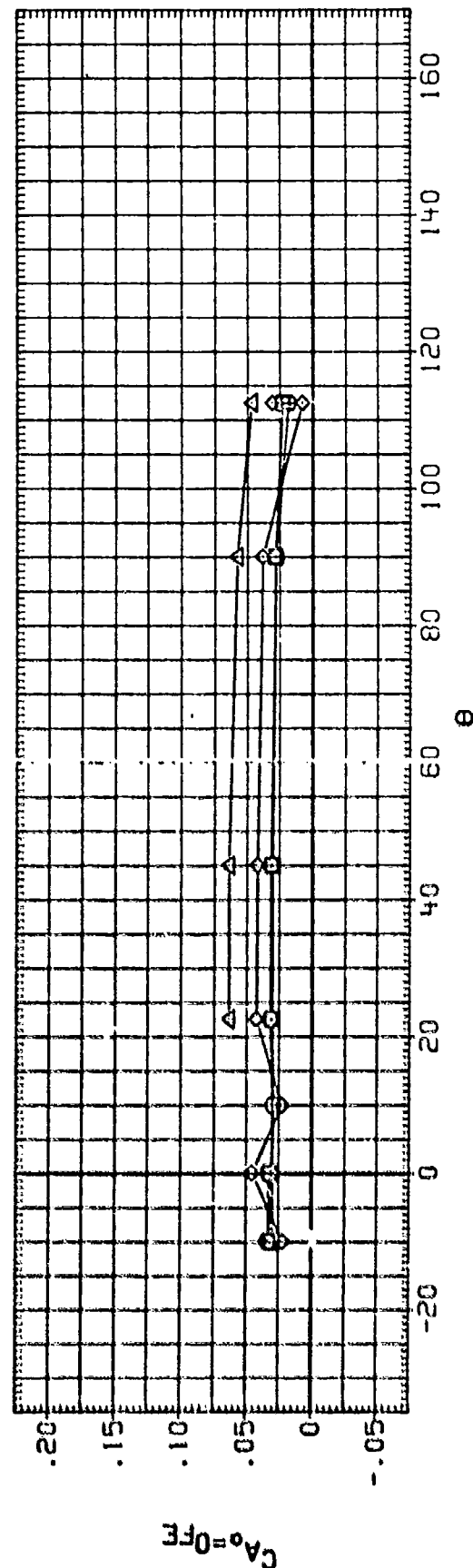
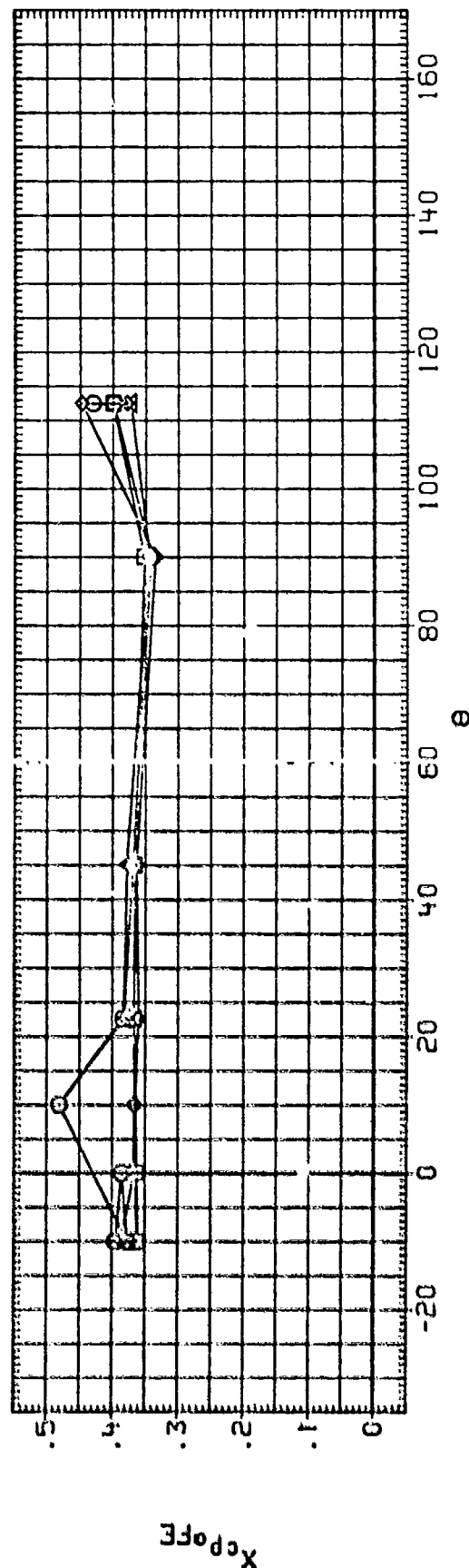
SEE THE ASSOCIATED DATA
DOCUMENT FOR REFERENCE
CHARACTERISTICS FOR
INDIVIDUAL DATASETS

DATASET THETA
GT9B08 .000
FX5B07 10.000
GX3B18 45.000
FX5B16 112.500

DATASET THETA
FX5B01 -10.000
GX3B01 -10.000
GX3B14 22.500
GX3B22 90.000
GX3B26 112.500

PARAMETRIC VALUES
C/D LAYDA
45.000 1.750
.000 .000
.029

SYMBOL MACH
◇ .500
□ .600
△ .700
△ .800
△ .900



TOTAL FIN EFFECTIVENESS WITH OPENING ANGLE, $\phi_{HI} = 0.0$

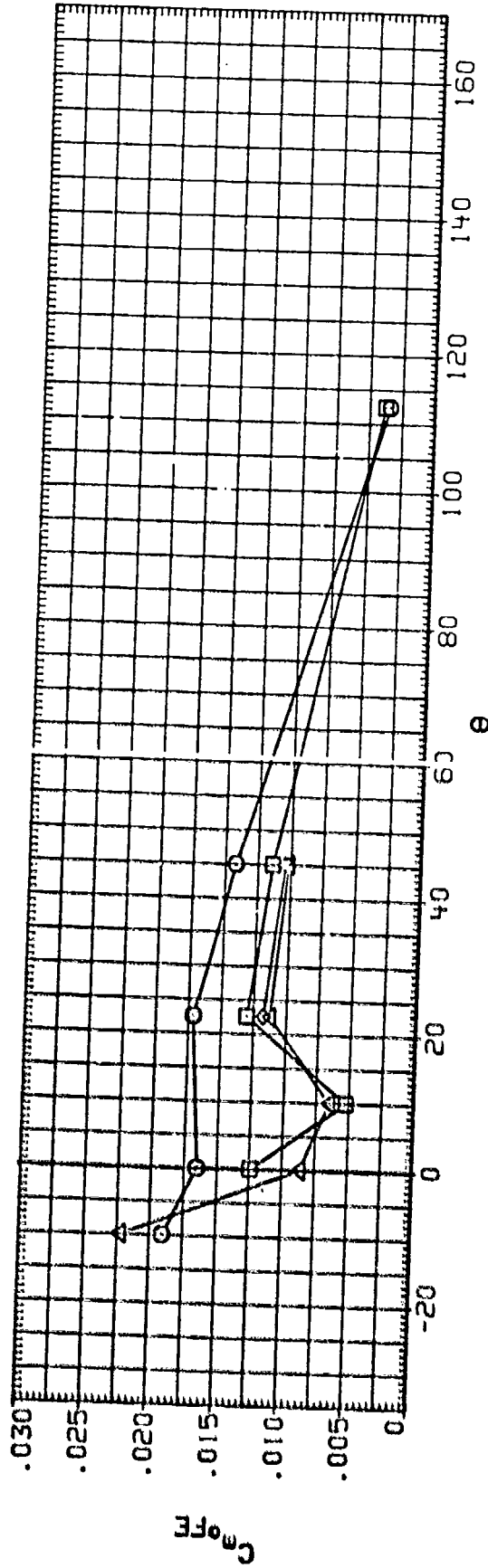
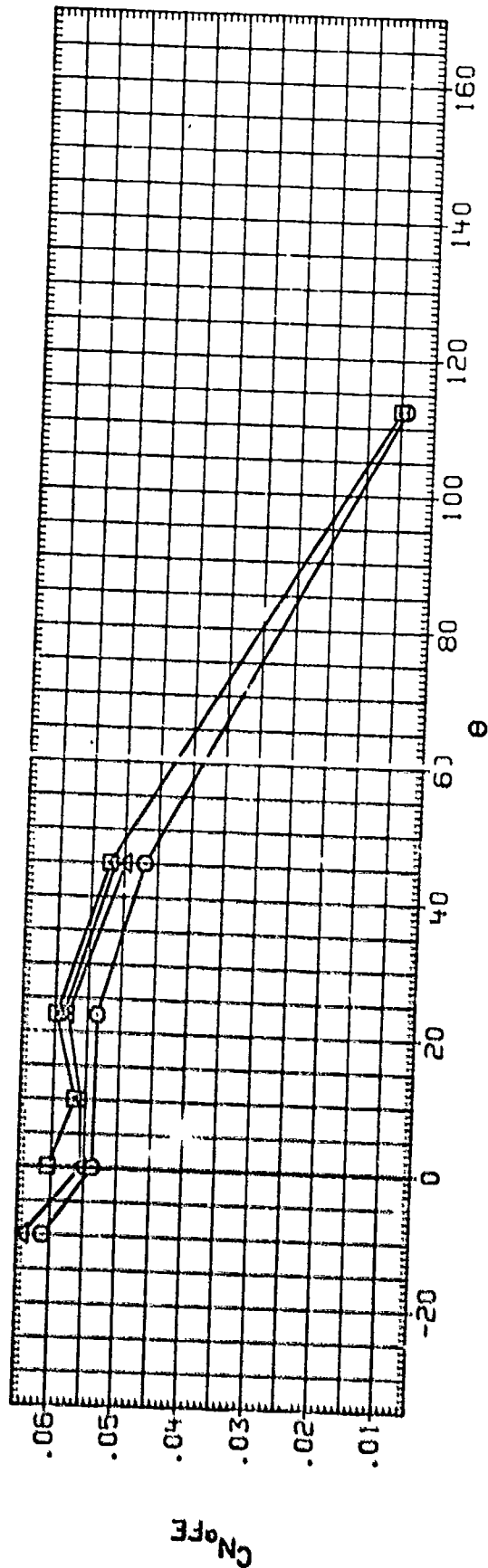
(FX5B01) MDAC S 255 INTERPOLATED MACH NO. B11.1 - B1-

SYMBOL MACH
 ○ .950
 □ 1.000
 △ 1.050
 ◇ 1.100

PAR. EXTRIC VALUES
 C/D .000
 LAY/EDA .650
 T/C 45.000

PHI 8/20
 DELTA
 DATASET THETA
 GT9808 -10.000
 GX3B14 10.000
 FX5B16 45.000

SEE THE ASSOCIATED DATA
 DOCUMENT FOR REFERENCE
 CHARACTERISTICS FOR
 INDIVIDUAL DATASETS



TOTAL FIN EFFECTIVENESS WITH OPENING ANGLE, PHI = 0.0

SEE THE ASSOCIATED DATA
DOCUMENT FOR REFERENCE
CHARACTERISTICS FOR
INDIVIDUAL DATASETS

DATASET THETA
GT9808 .000
GX3814 22.500
FX5816 112.500

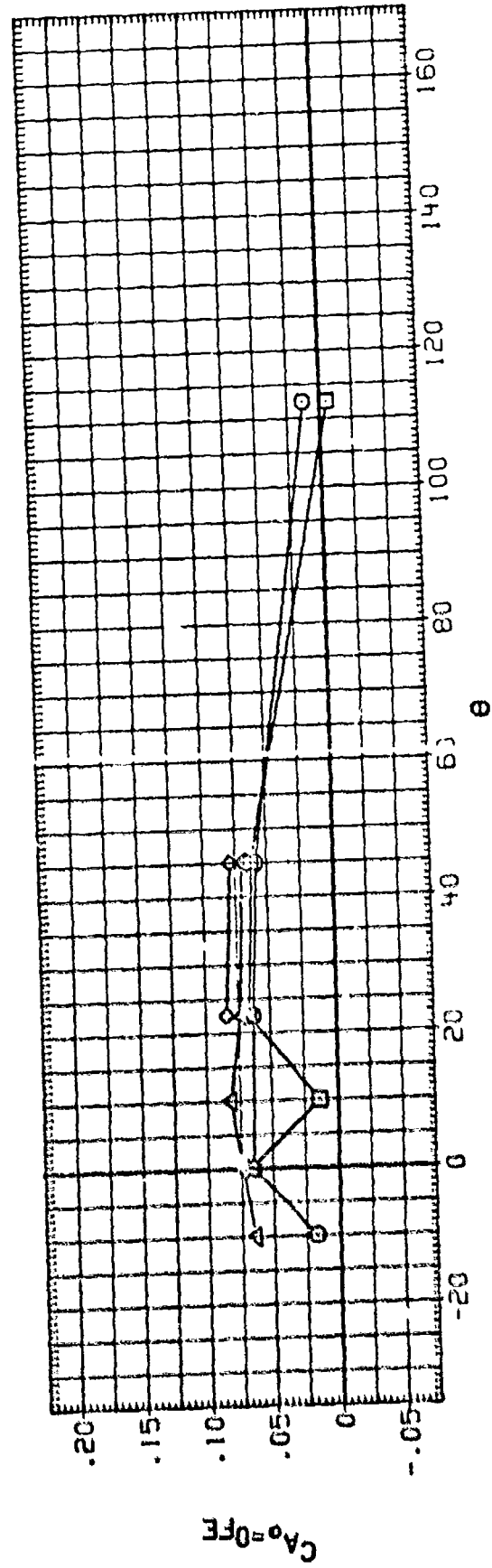
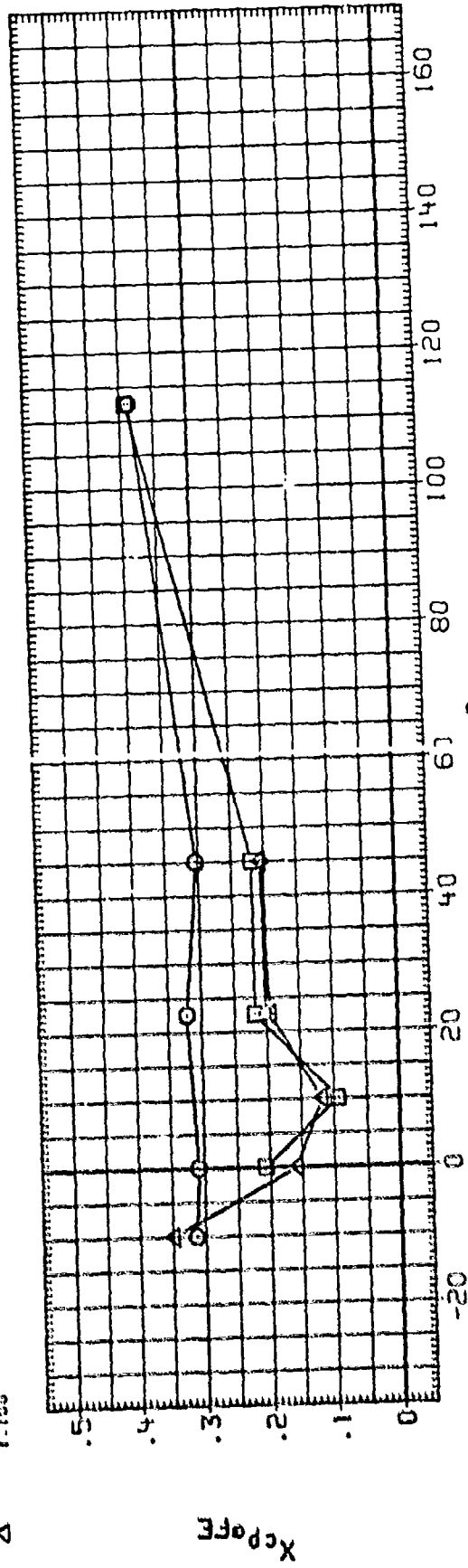
DATASET THETA
FX5801 -10.000
FX5807 10.000
GX3818 45.000

PARAMETRIC VALUES
1.750
.000
.009
.029

C/D
L/W
T/C

PHI
B/20
DELTA

(FX5801) MDAC S 256 INTERPOLATED MACH NO., B111 - B1
SYMBOL MACH
0.923
1.000
1.050
1.100



TOTAL FIN EFFECTIVENESS WITH OPENING ANGLE, PHI = 0.0

(FX5B01) MDAC S 256 INTERPOLATED MACH NO., BIFI - B1

SYMBOL

MACH

 Φ
 δ

 1.930
 2.360
 2.860

 Φ
 δ

 1.930
 2.360
 2.860

 SEE THE ASSOCIATED DATA
 DOCUMENT FOR REFERENCE
 CHARACTERISTICS FOR
 INDIVIDUAL DATASETS

 DATASET
 FX5B04
 FX5B10

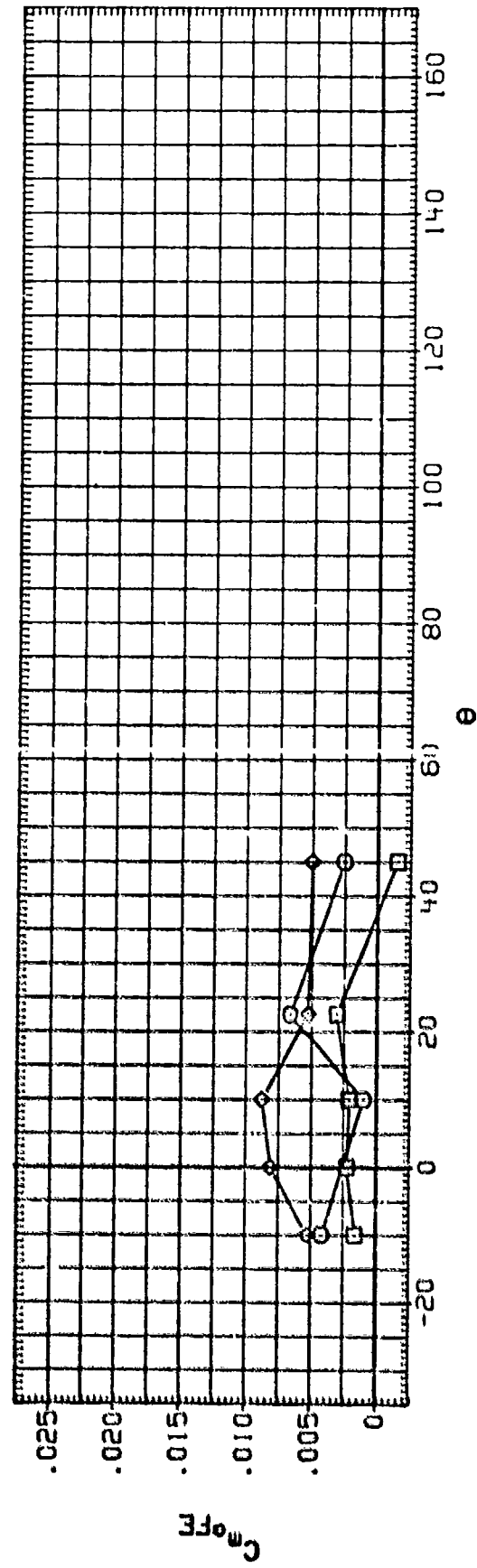
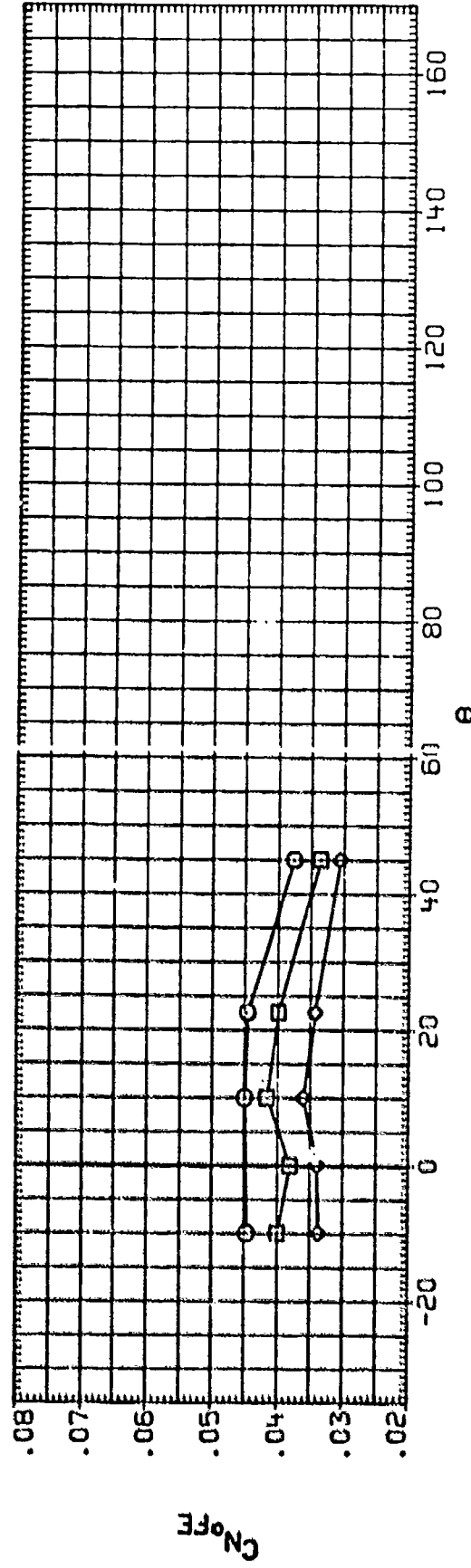
 DATASET
 FX5B04
 FX5B10

 DATASET
 FX5B04
 FX5B10

 DATASET
 FX5B04
 FX5B10

 DATASET
 FX5B04
 FX5B10

 DATASET
 FX5B04
 FX5B10

 DATASET
 FX5B04
 FX5B10
TOTAL FIN EFFECTIVENESS WITH OPENING ANGLE, $\Phi = 0.0$

(FX5801) MDAC S 256 INTERPOLATED MACH NO., 31F1 - B1

SEE THE ASSOCIATED DATA
DOCUMENT FOR REFERENCE
CHARACTERISTICS FOR
INDIVIDUAL DATASETS

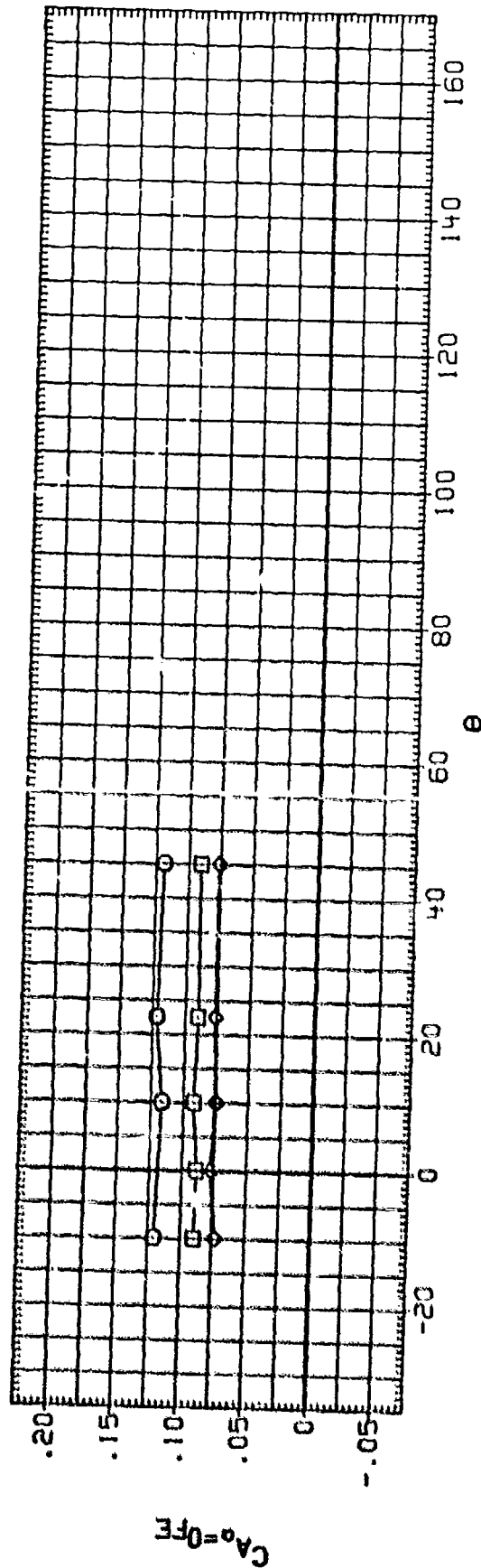
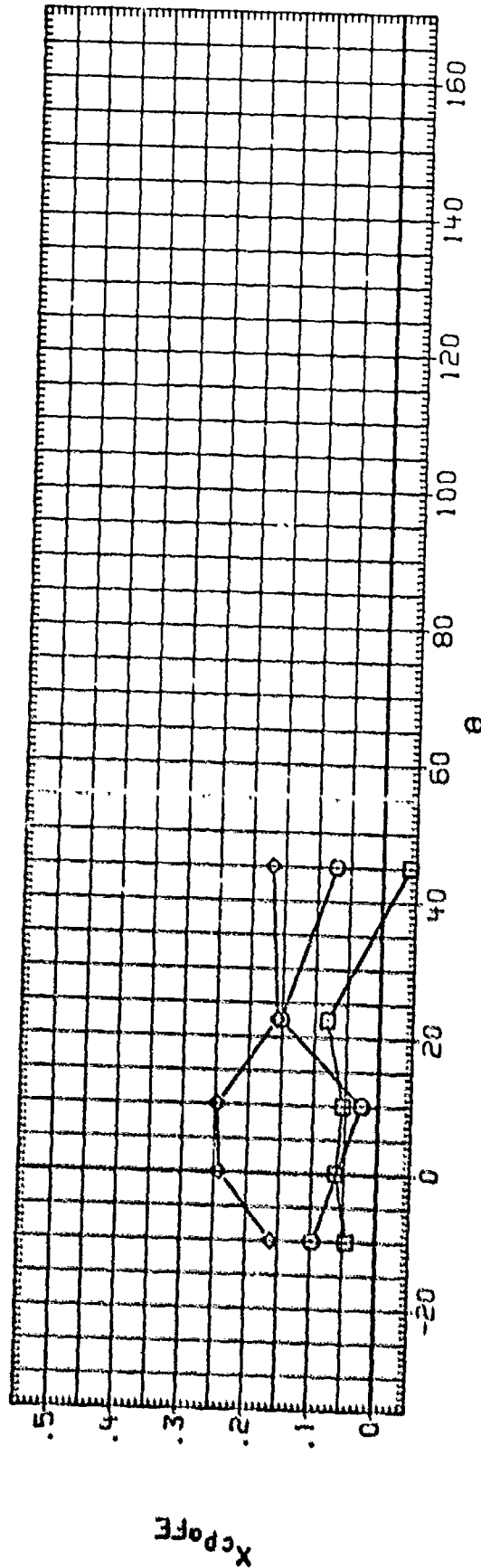
DATASET THETA
FX5804 .000
FX5810 22.500

DATASET THETA
FX5801 -10.000
FX5807 10.000
FX5813 45.000

PARAMETRIC VALUES
C/D .029
L/VSCA .029
T/C .029

PHI
B/20
DELTA

1.930
2.350
2.850



TOTAL FIN EFFECTIVENESS WITH OPENING ANGLE, $\Phi = 0.0$

(2X5101) MDAC S 255 INTERPOLATED MACH NO., BIF1 - B1

SEE THE ASSOCIATED DATA DOCUMENT FOR REFERENCE CHARACTERISTICS FOR INDIVIDUAL DATASETS

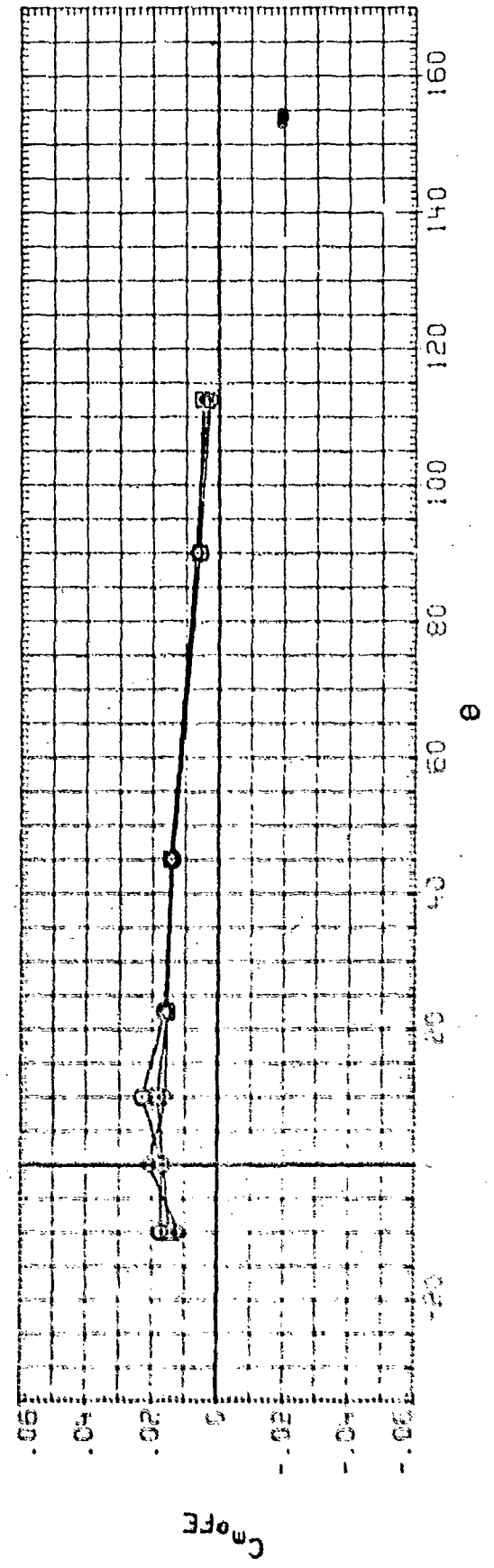
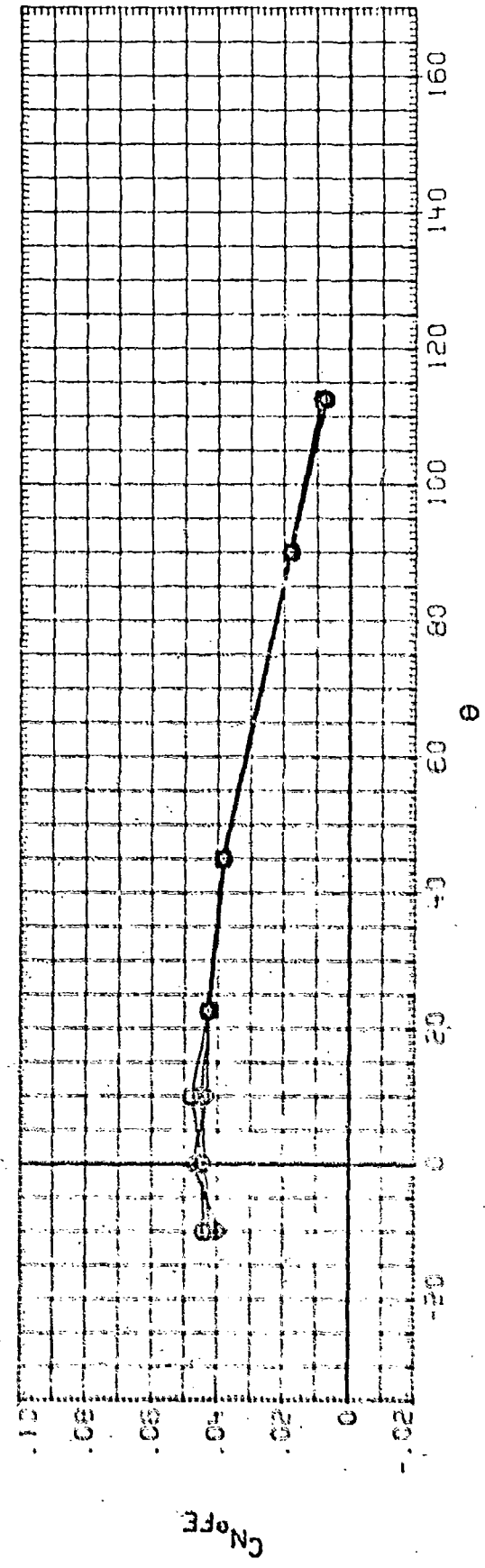
DATASET THETA
2X5108 .000
2X5114 22.500
2X5122 50.000

DATASET THETA
2X5101 -10.000
2X5107 10.000
2X5118 45.000
2X5116 112.500

PARAMETRIC VALUES
MACH 1.750
C/D .000
LAMBDA .029
T/C .029

MACH
B1C
B1L4

2X5101
2X5107
2X5118
2X5116



(2X5101) MDAC S 256 INTERPOLATED MACH NO. B1F1 - B1

PK:
SPEED
0.000
28.000
40.000
60.000

MACH
0.000
0.200
0.400

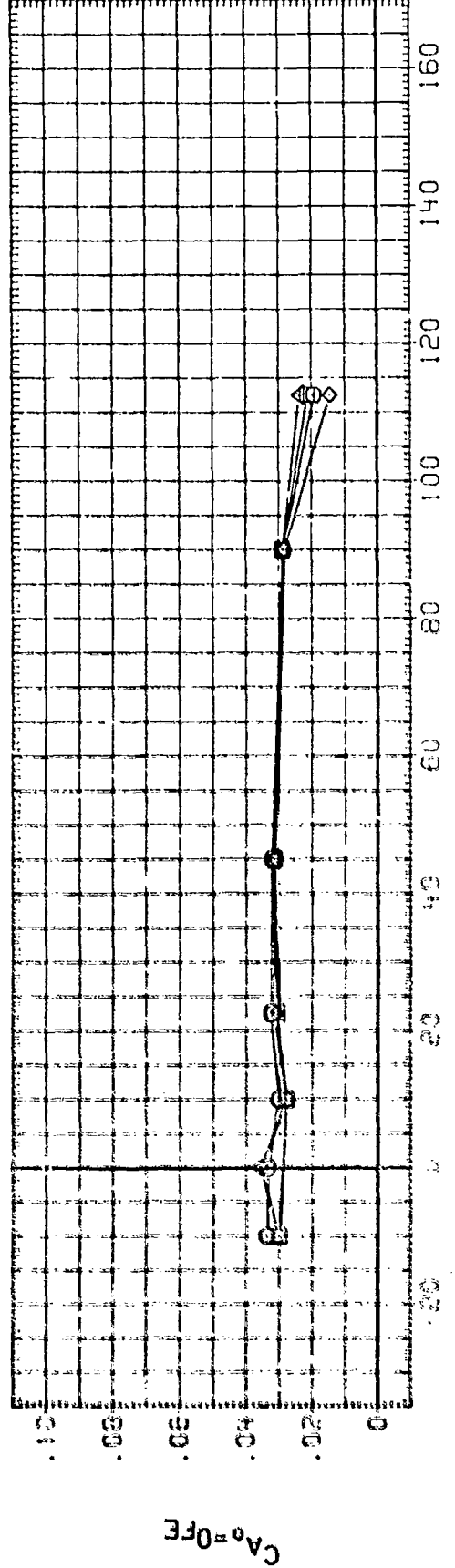
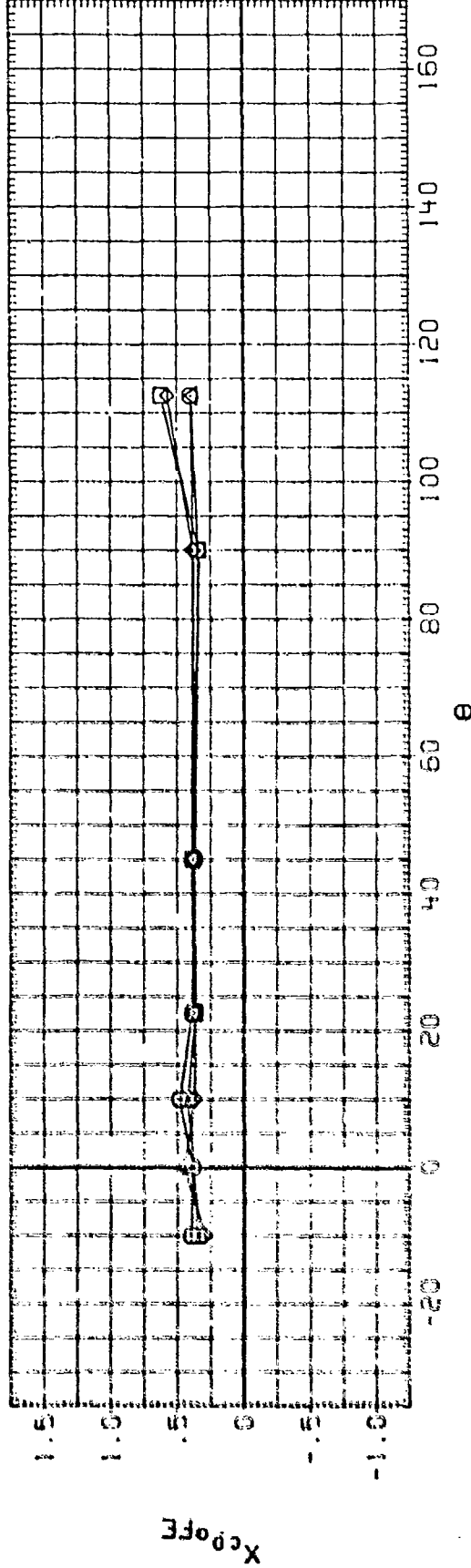
PARAMETRIC VALUES
C/D
LAP/DA
1/C

1.750
0.000
0.029

DATASET
2X9108
2X3114
2X3122

THETA
-0.000
22.500
90.000

SEE THE ASSOCIATED DATA
DOCUMENT FOR REFERENCE
CHARACTERISTICS FOR
INDIVIDUAL DATASETS



(2X5201) MDAC S 256 INTERPOLATED MACH NO., B1F1 - B1

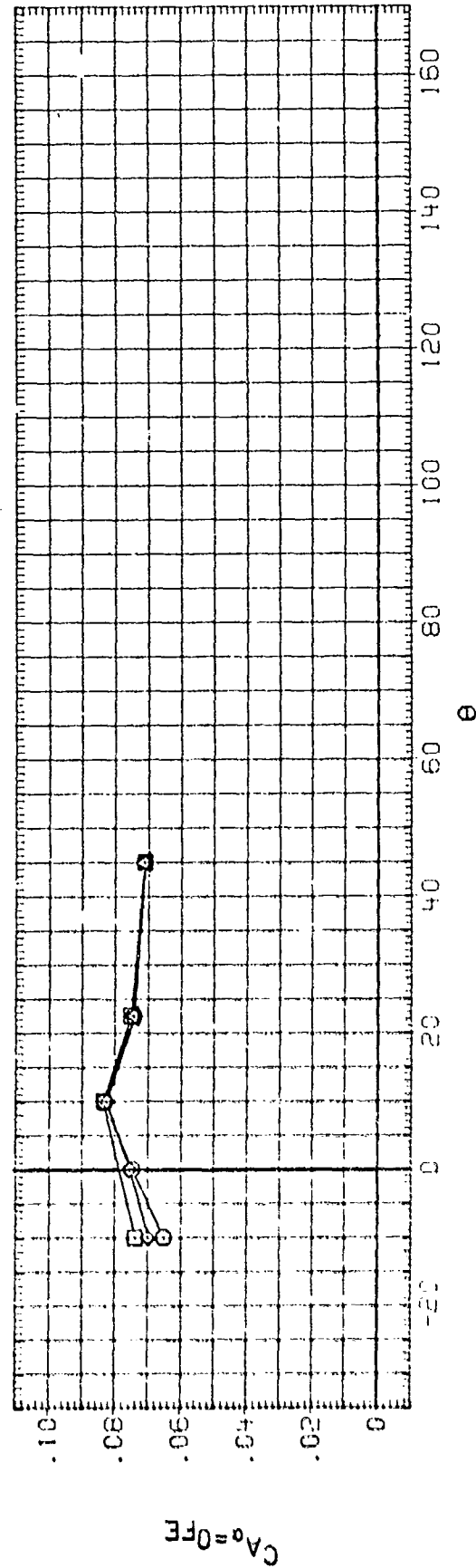
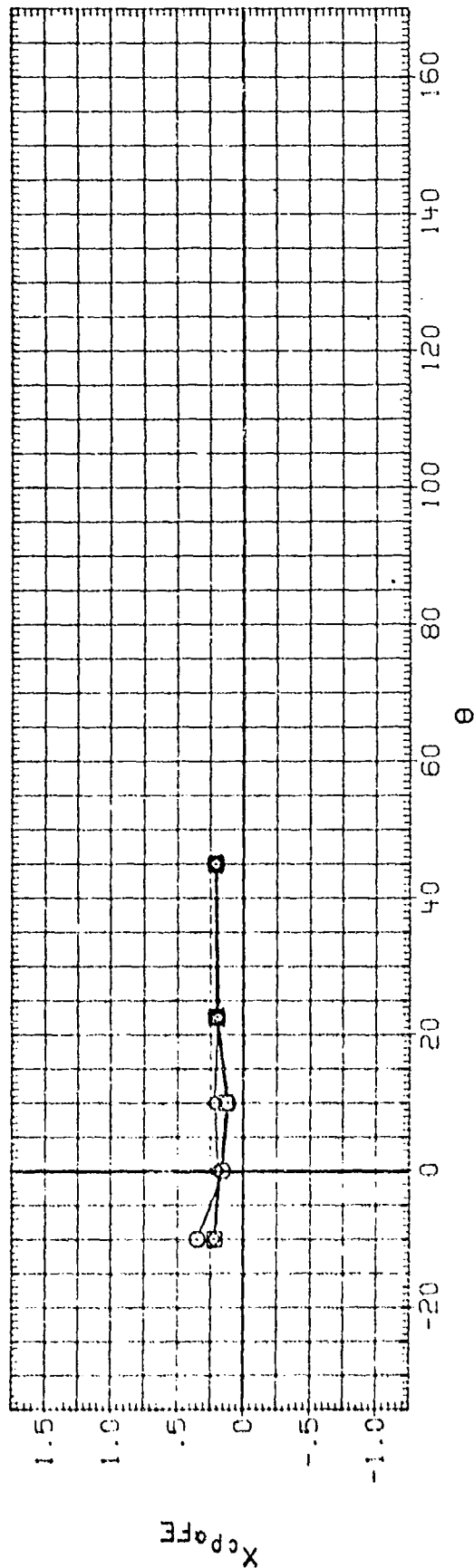
SYMBOL PHI
22.500
45.000
67.500

MACH
8.20
DELTA
1.100
C/D
1.600
LAMEDA
45.000
T/C
1.750
1.000
.029

DATASET
2X5201
2X5207
2X3218

THETA
-10.000
10.000
45.000

SEE THE ASSOCIATED DATA
DOCUMENT FOR REFERENCE
CHARACTERISTICS FOR
INDIVIDUAL DATASETS



FIN EFFECTIVENESS WITH OPENING ANGLE - ROLL EFFECTS

SEE THE ASSOCIATED DATA
DOCUMENT FOR REFERENCE
CHARACTERISTICS FOR
INDIVIDUAL DATASETS

DATASET THETA
2X5304 .000
2X5310 22.500

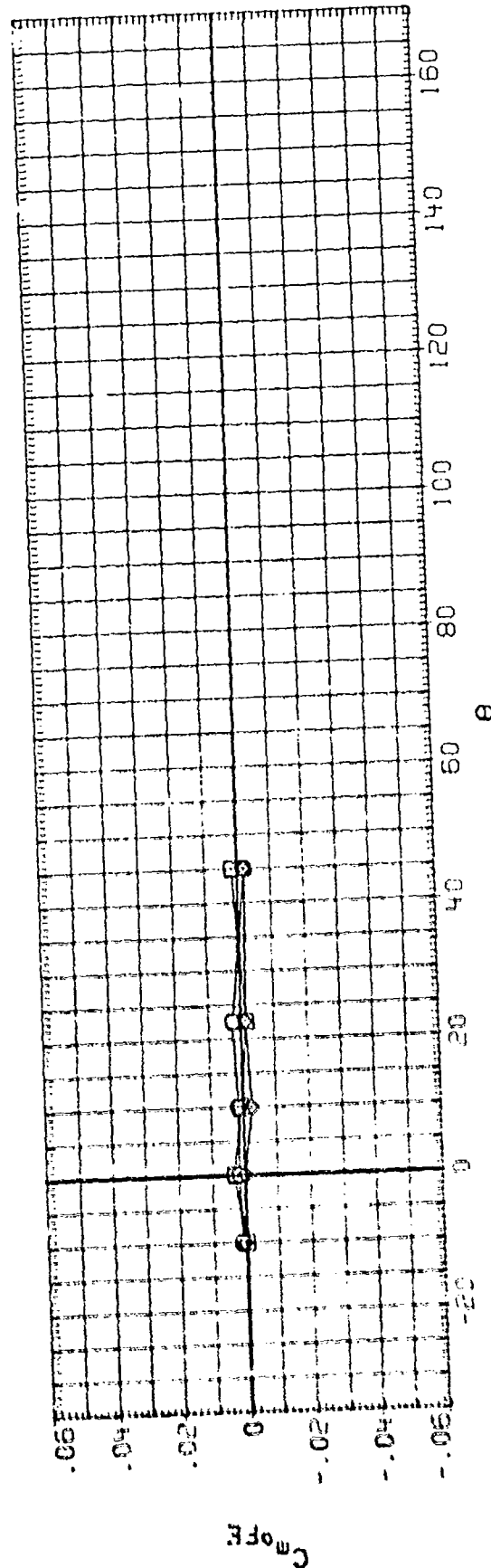
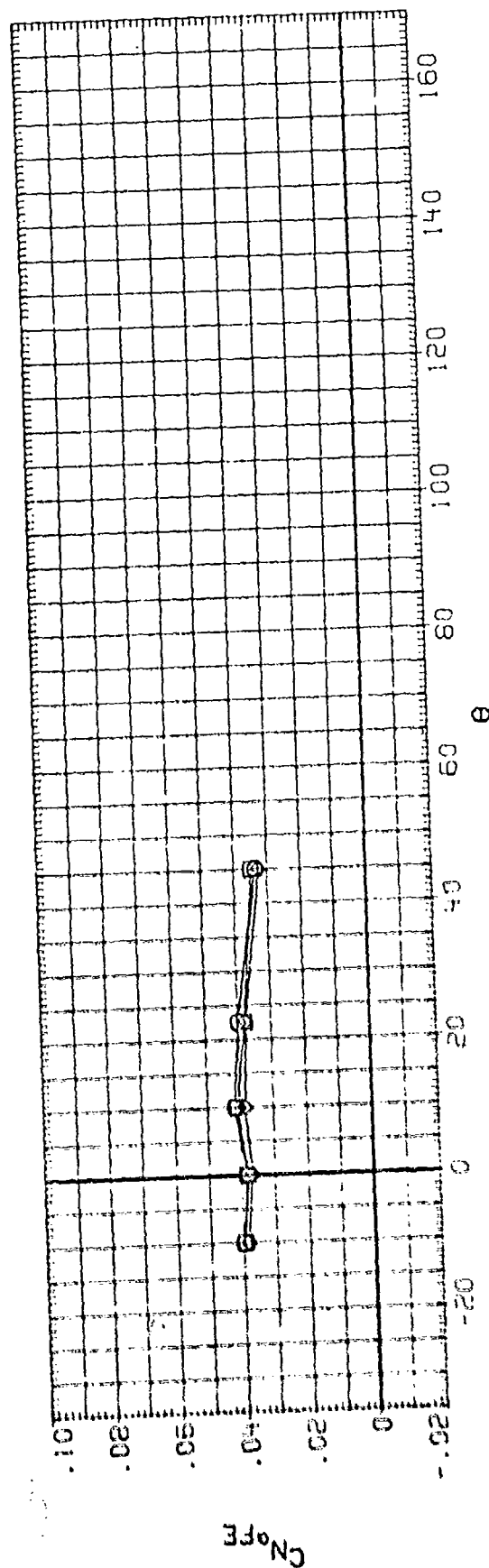
DATASET THETA
2X5301 -10.000
2X5307 10.000
2X5315 45.000

PARAMETRIC VALUES
C/D LAMBDA
1.750 .000
.000 .000
.029 .000

MACH
8/20
DELTA

PAI
22.500
45.000

(2X5301)
NDAC S 256 INTERPOLATED MACH NO., BIF1 - B1



FIN EFFECTIVENESS WITH OPENING ANGLE - ROLL EFFECTS

(2X5301) MDAC S 256 INTERPOLATED MACH NO., BIF1 - B1

SEE THE ASSOCIATED DATA
DOCUMENT FOR REFERENCE
CHARACTERISTICS FOR
INDIVIDUAL DATASETS

DATASET THETA
2X5304 .000
2X5310 22.500

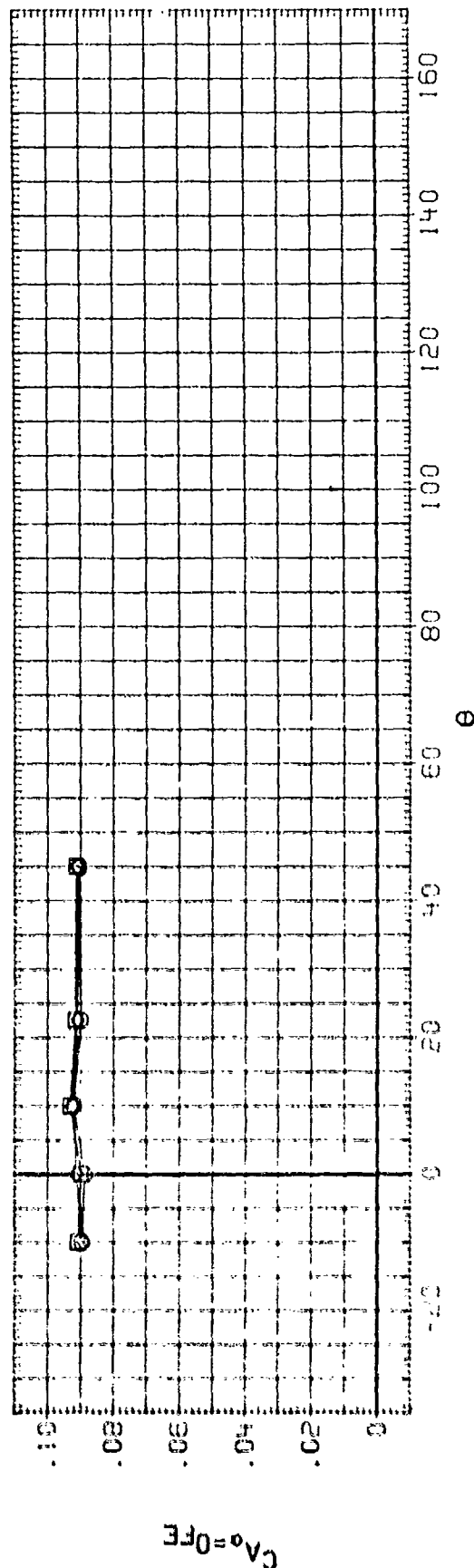
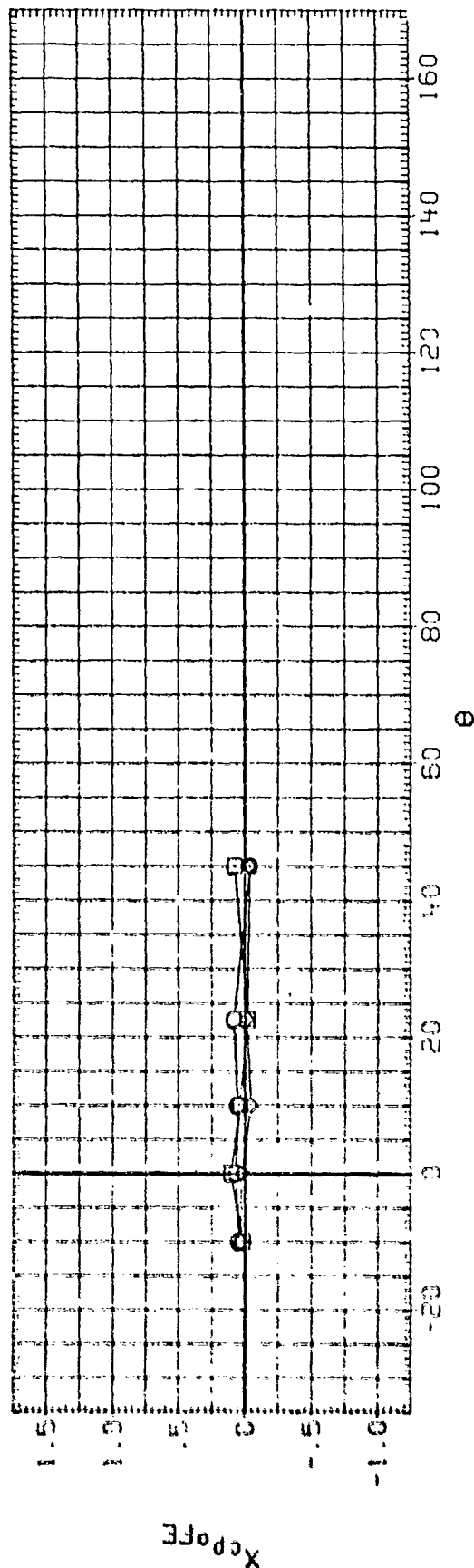
DATASET THETA
2X5301 -10.000
2X5307 10.000
2X5313 45.000

PARAMETRIC VALUES
C/D
LAMEDA
T.C

MACH
B 20
DELTA

22.500
45.000

22.500
45.000



PLOTTED DATA APPENDIX D.
FIN-BODY INTERFERENCE FACTORS

<u>CONFIGURATION</u>	<u>PAGE</u>
F1	1-2
F2	3-3
F4	4-4
F5	5-5
F6	6-6
F7	7-7
F8	8-8
F9	9-9
F15	10-10

Tabulations of the plotted data and corresponding source data are available from Data Management Services Operations.

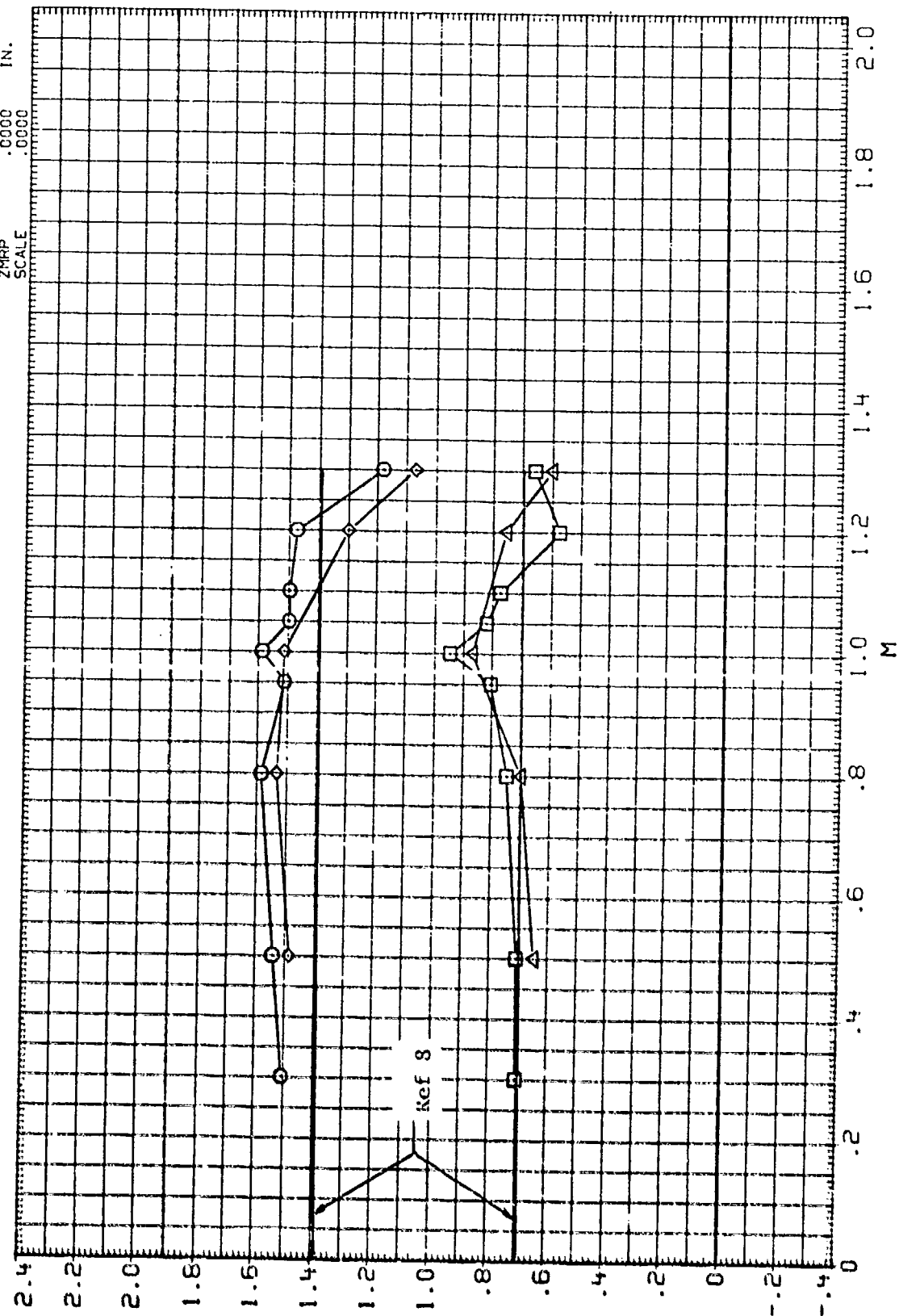
DATA SET SYMBOL CONFIGURATION DESCRIPTION

(FTS108) AEDC 154/170. WING IN PRESENCE OF BODY. F1. KH(B)
 (FTS208) AEDC 154/170. BODY IN PRESENCE OF WING. F1. KB(W)
 (HX3105) AEDC 1C 273. WING IN PRESENCE OF BODY. F1. KH(B)
 (HX3205) AEDC 1C 273. BODY IN PRESENCE OF WING. F1. KB(W)

C/D 1.750
 T/C .029
 DELTA 45.000
 LAMBDA .000

REFERENCE INFORMATION
 SREF 18.4800 SQ. IN.
 LREF 7.0000 IN.
 BREF 2.6400 IN.
 XMRP .0000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0000

$K_{W(B)}$ AND $K_{B(W)}$. SEE DESCRIPTION FOR APPLICABLE COEFFICIENT



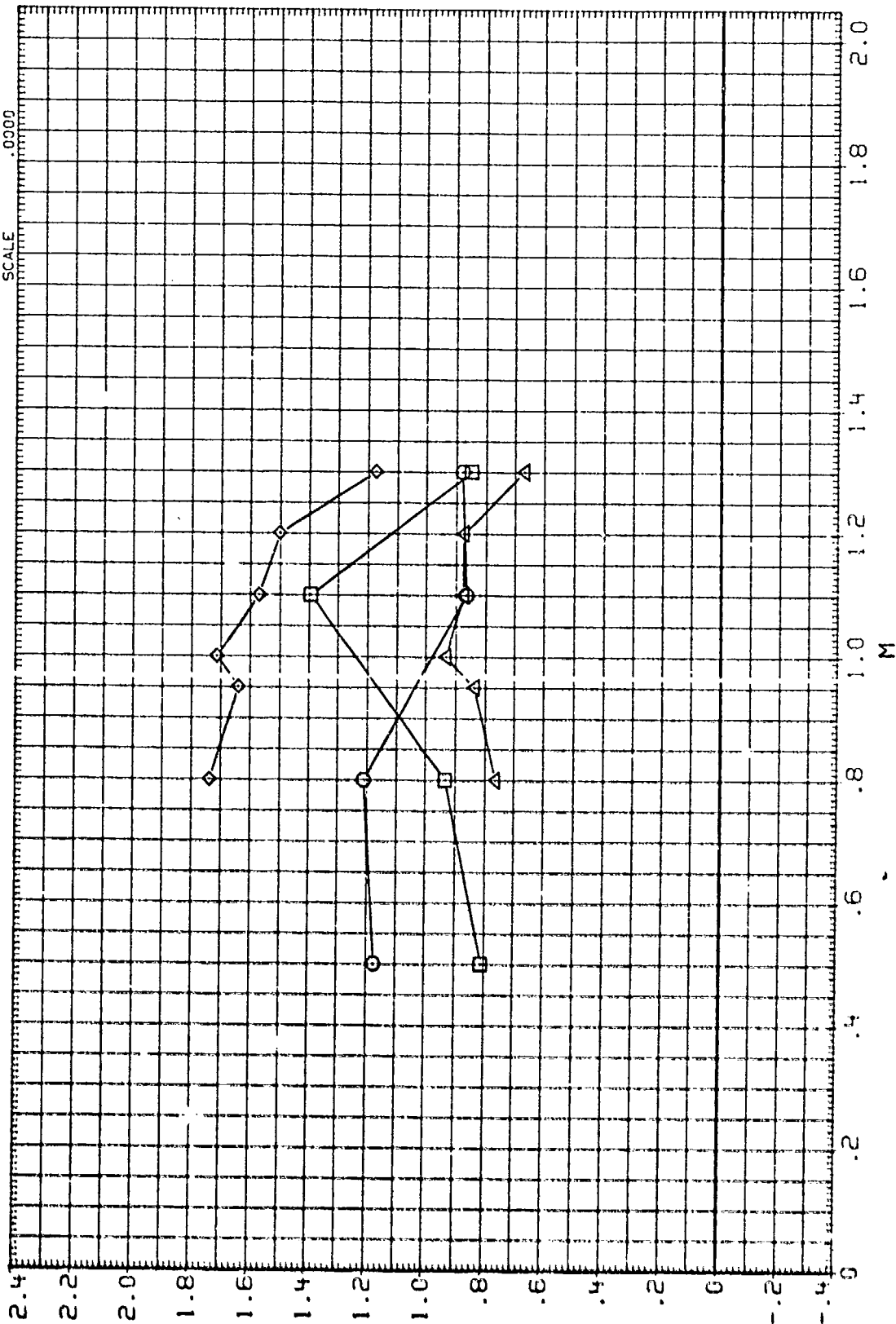
FIN-BODY INTERFERENCE FACTORS - FIN F1

DATA SET SYMBOL CONFIGURATION DESCRIPTION

IFX51931 □ KCAC S 255. WING IN PRESENCE OF BODY. F1. KW(B)
 IFX52031 □ KCAC S 255. BODY IN PRESENCE OF WING. F1. KB(W)
 IFB1011 ◇ AEDC TC 202. WING IN PRESENCE OF BODY. F1. KW(B)
 IFB2011 △ AEDC TC 202. BODY IN PRESENCE OF WING. F1. KB(W)

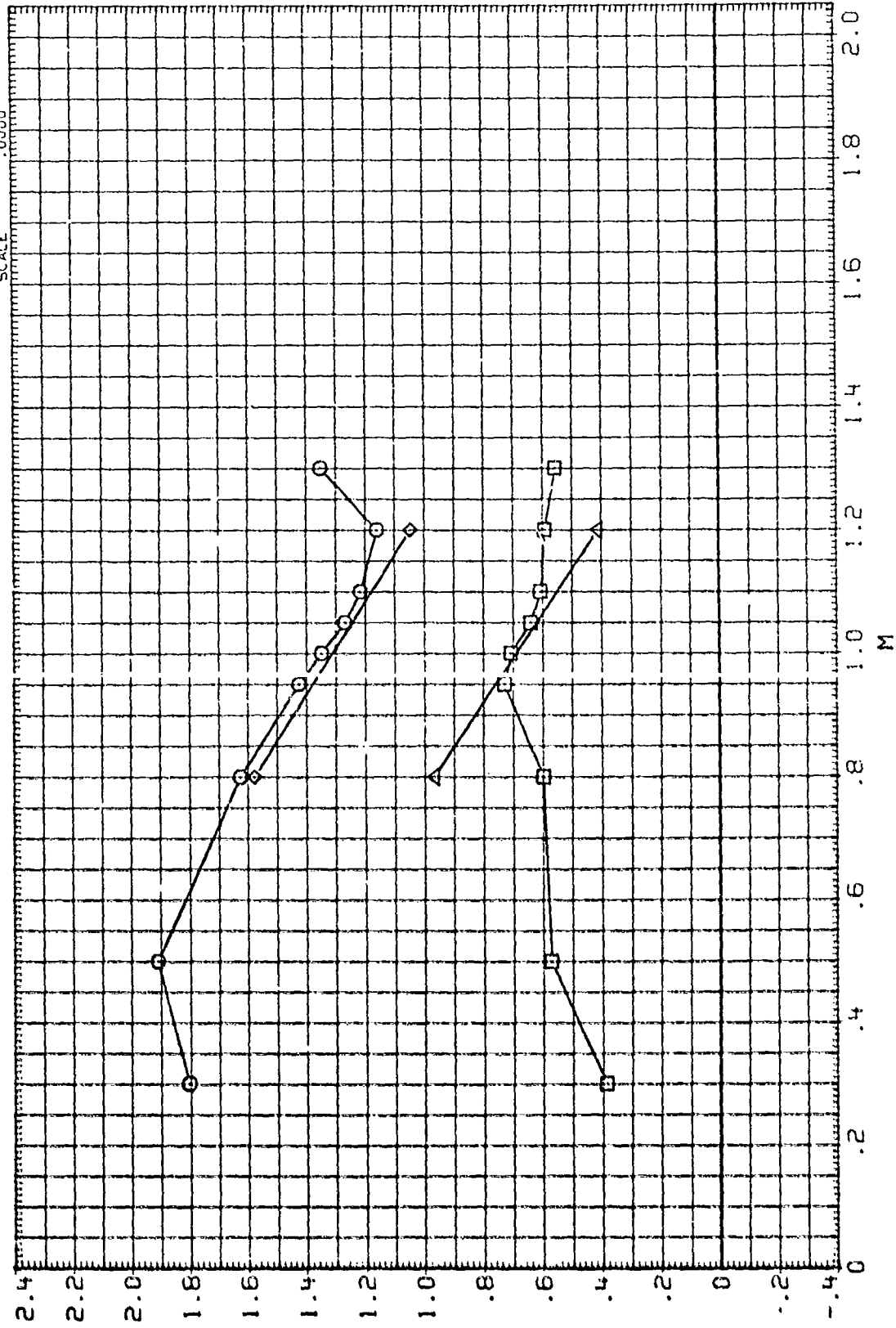
(L/D) T/C DELTA LAMBDA REFERENCE INFORMATION
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 LREF 7.0000 IN.
 BREF 2.6400 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0000

$K_{W(B)}$ AND $K_{B(W)}$ · SEE DESCRIPTION FOR APPLICABLE COEFFICIENT



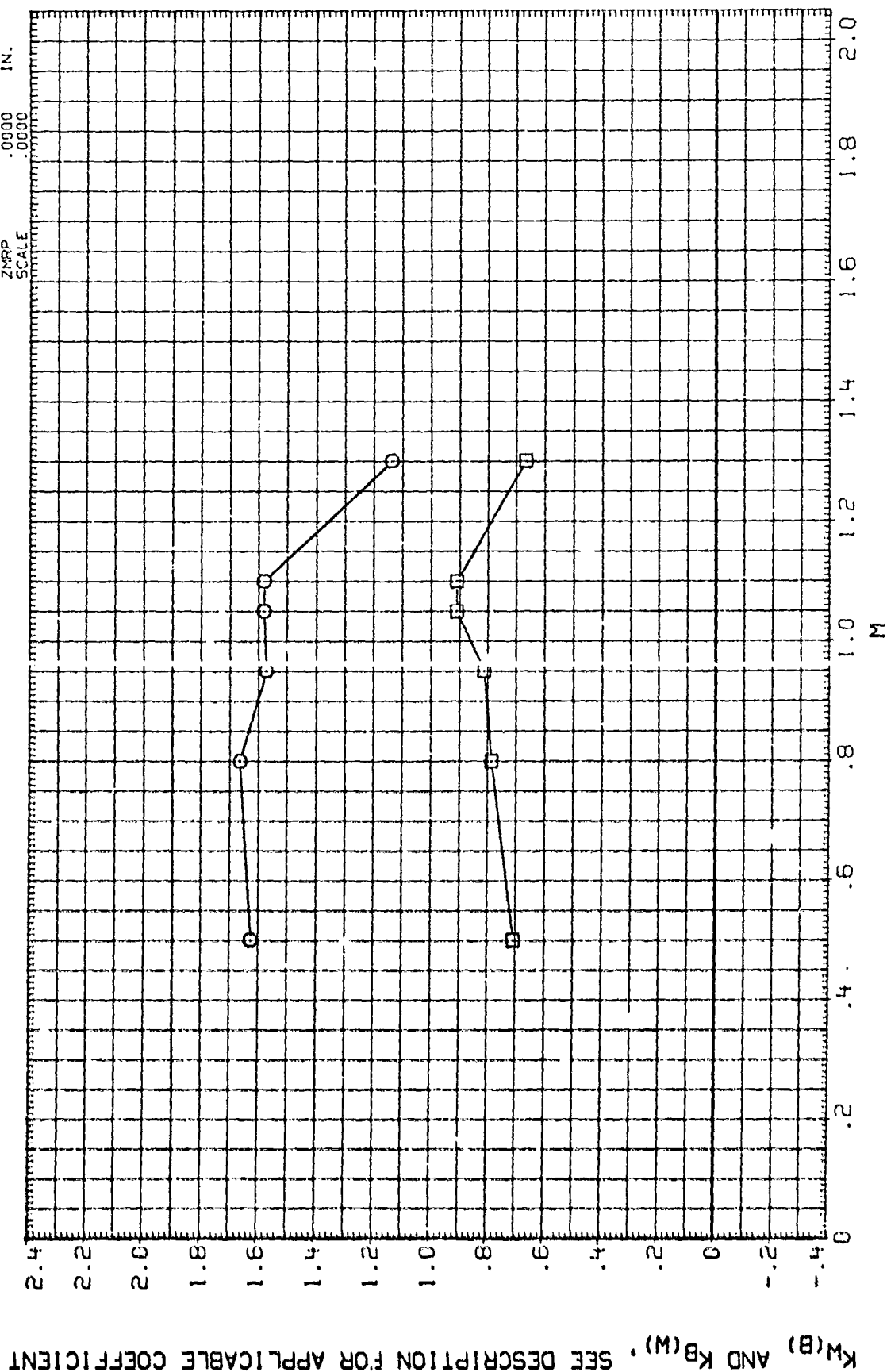
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	L/D	T/C	DELTA	LAMBDA	REFERENCE INFORMATION
(FY917)	○	AEDC 154/170 WING IN PRESENCE OF BODY	1.000	.029	45.000	.000	SREF 10.4000 SQ. IN.
(FY9217)	□	AEDC 154/170 BODY IN PRESENCE OF WING	1.000	.029	45.000	.000	LREF 4.0000 IN.
(FY5119)	◇	MCAC S 255 WING IN PRESENCE OF BODY	1.000	.029	45.000	.000	BREF 2.6000 IN.
(FY5219)	△	MCAC S 255 BODY IN PRESENCE OF WING	1.000	.029	45.000	.000	XMRP .0000 IN.
							YMRP .0000 IN.
							ZMRP .0000 IN.
							SCALE .0000

$K_{W(B)}$ AND $K_{B(W)}$ • SEE DESCRIPTION FOR APPLICABLE COEFFICIENT



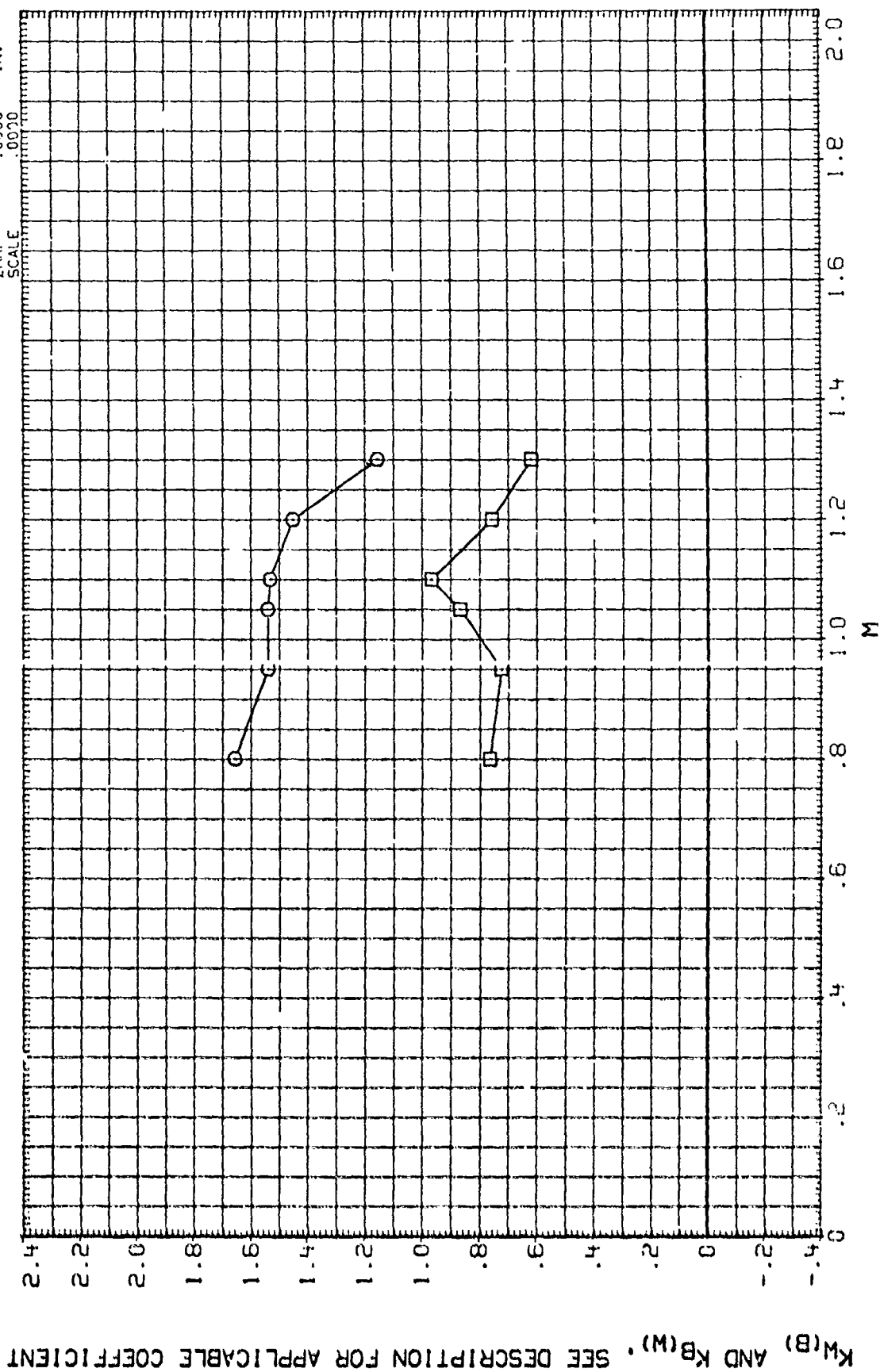
FIN-BODY INTERFERENCE FACTORS - FIN F2

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	C/D	T/C	DELTA	LAMBDA	REFERENCE INFORMATION
(F19131)	○	AEDC 154/170, WING IN PRESENCE OF BODY, F4 KB(B)	1.750	.029	180.000	.003	SREF 18.4800 SQ. IN.
(F19231)	□	AEDC 154/170 BODY IN PRESENCE OF WING, F4, KB(W)	1.750	.029	180.000	.000	LREF 7.0000 IN.
							BREF 2.6400 IN.
							XMRP .0000 IN.
							YMRP .0000 IN.
							ZMRP .0000 IN.
							SCALE .0000



FIN-BODY INTERFERENCE FACTORS - FIN F4

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	W/D	T/C	DELTA	LAMBDA	REFERENCE INFORMATION
(F19133)	○	AEDC 154/170, WING IN PRESENCE OF BODY, F5 KB(B)	1.750	.029	20.000	.000	SREF 18.4800 SQ. IN.
(F19233)	□	AEDC 154/170 BODY IN PRESENCE OF WING, F5, KB(W)	1.750	.029	20.000	.000	LREF 7.0000 IN.
							SREF 2.6400 IN.
							XMRP .0000 IN.
							YMRP .0000 IN.
							ZMRP .0000 IN.
							SCALE .0020



FIN-BODY INTERFERENCE FACTORS - FIN F5

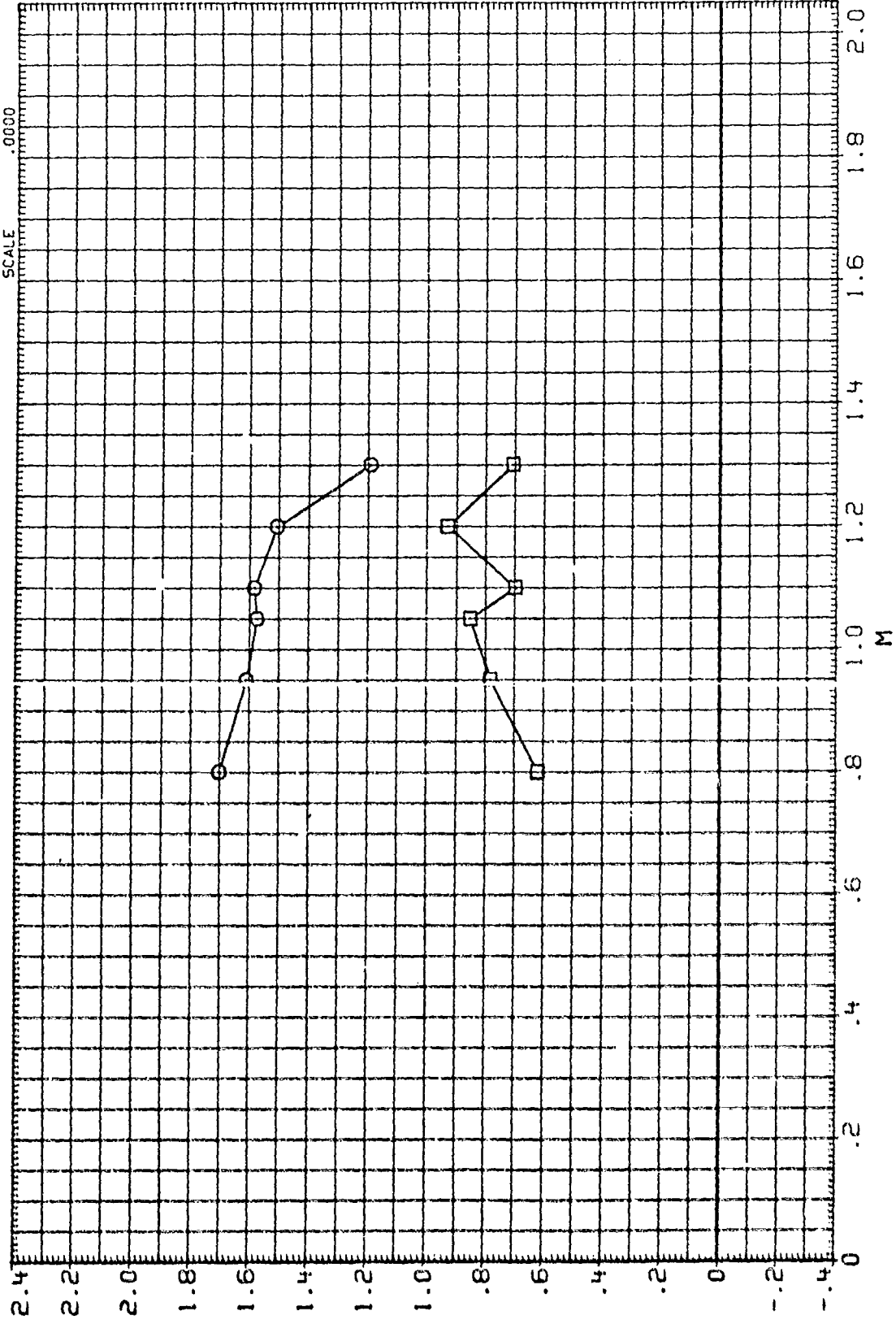
DATA SET SYMBOL CONFIGURATION DESCRIPTION

IF191351 AEDC 154/170. WING IN PRESENCE OF BODY. F6 KB(B)
 IF192351 AEDC 154/170 BODY IN PRESENCE OF WING. F6. KB(W)

C/D 1.750
 T/C .029
 DELTA 22.500
 LAMBDA .000

REFERENCE INFORMATION
 SREF 18.4800 SO. IN.
 LREF 7.0000 IN.
 BREF 2.6400 IN.
 XMRP .0000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0000

$K_W(B)$ AND $K_B(W)$. SEE DESCRIPTION FOR APPLICABLE COEFFICIENT

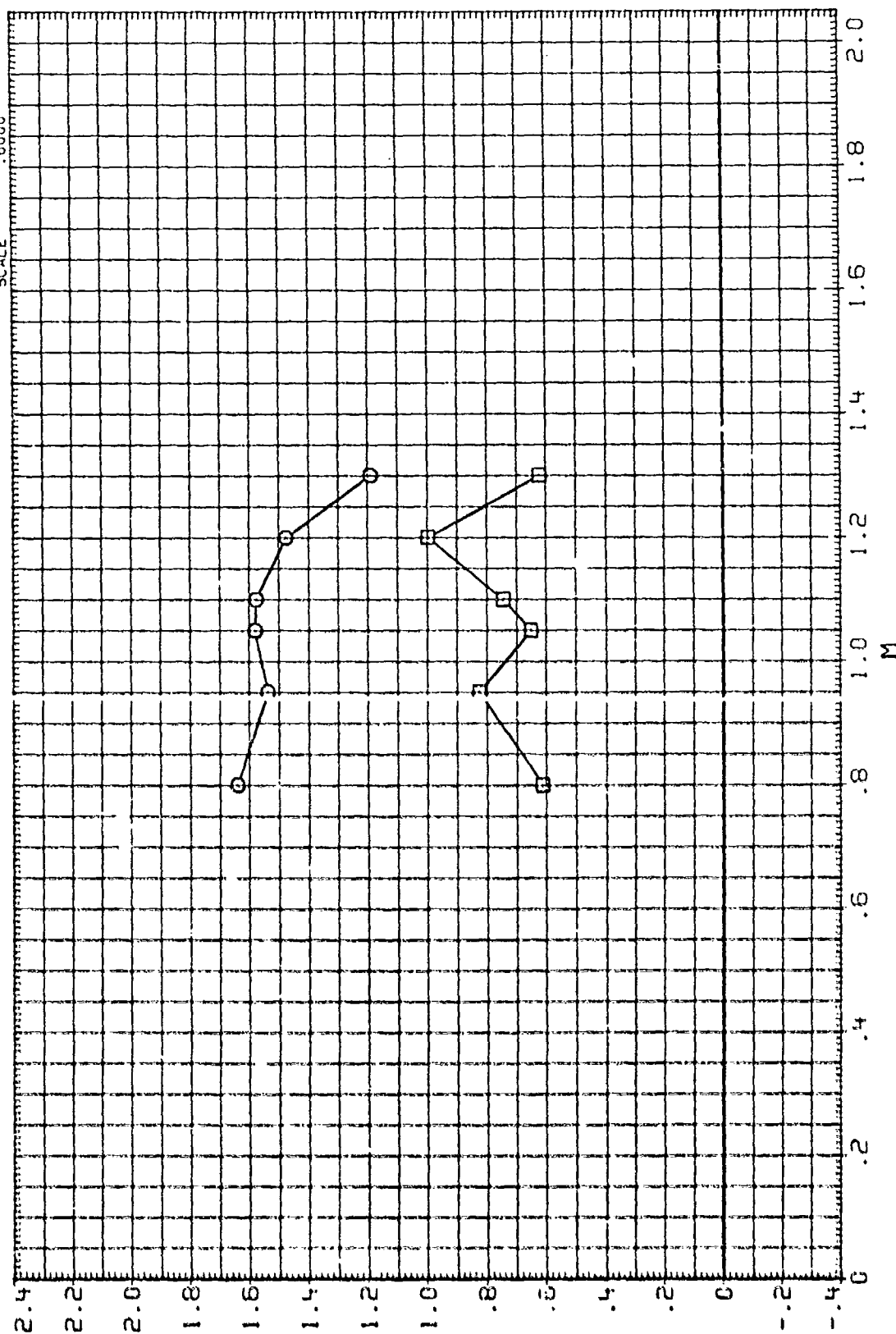


FIN-BODY INTERFERENCE FACTORS - FIN F6

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F19137) ☐ AEDC 154/170. WING IN PRESENCE OF BODY, F7 KB(W)
 (F19237) ☐ AEDC 154/170 BODY IN PRESENCE OF WING, F7, KB(W)

C/D T/C DELTA LAMBDA REFERENCE INFORMATION
 1.750 .015 45.000 .000 SREF 18.4800 SQ. IN.
 1.750 .015 45.000 .000 LREF 7.0000 IN.
 XMRP .0000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0000

$K_{B(W)}$ AND $K_{B(W)}$. SEE DESCRIPTION FOR APPLICABLE COEFFICIENT



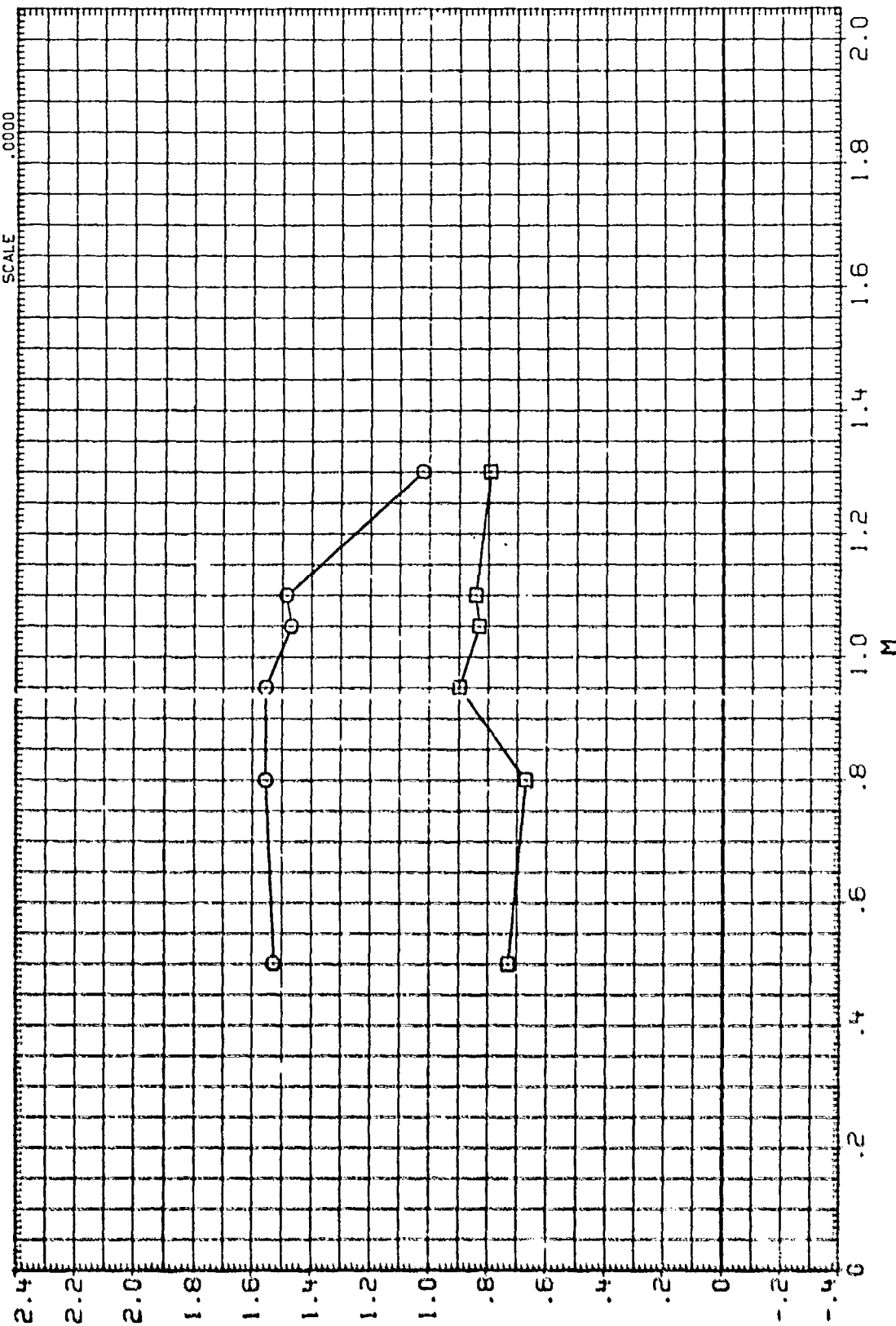
FIN-BODY INTERFERENCE FACTORS - FIN F7

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F18145) ○ AEDC 154/170 WING IN PRESENCE OF BODY, F8 KH1B)
 (F15245) □ AEDC 154/170 BODY IN PRESENCE OF WING, F8, KB1W)

C/D T/C DELTA LAMBDA
 1.750 .045 45.000 .000
 1.750 .045 45.000 .000

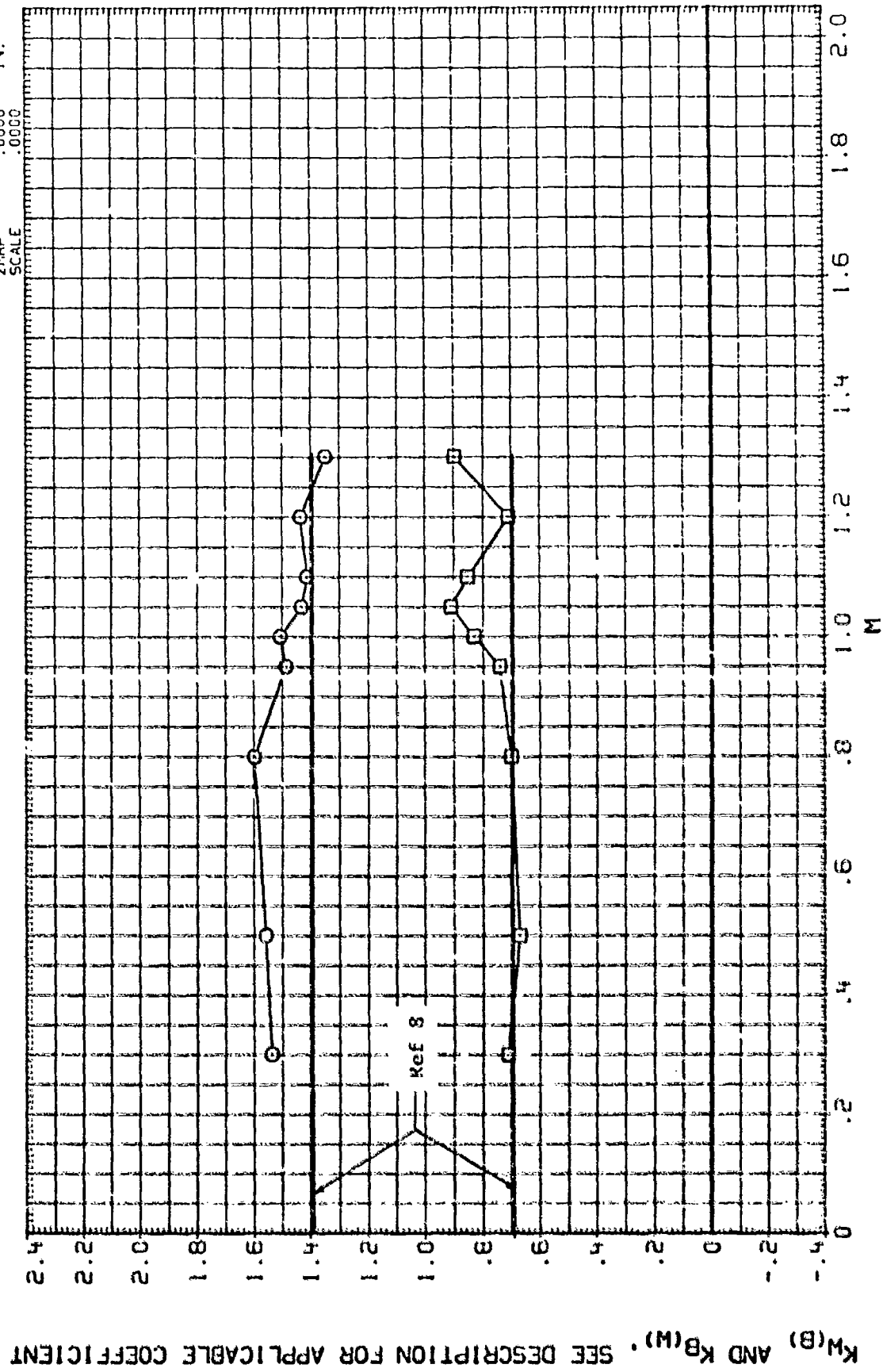
REFERENCE INFORMATION
 SREF 18.4800 SQ. IN.
 LREF 7.0000 IN.
 BREF 2.6400 IN.
 YMRP .0000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0000

$K_{(B)}$ AND $K_{B(W)}$ · SEE DESCRIPTION FOR APPLICABLE COEFFICIENT

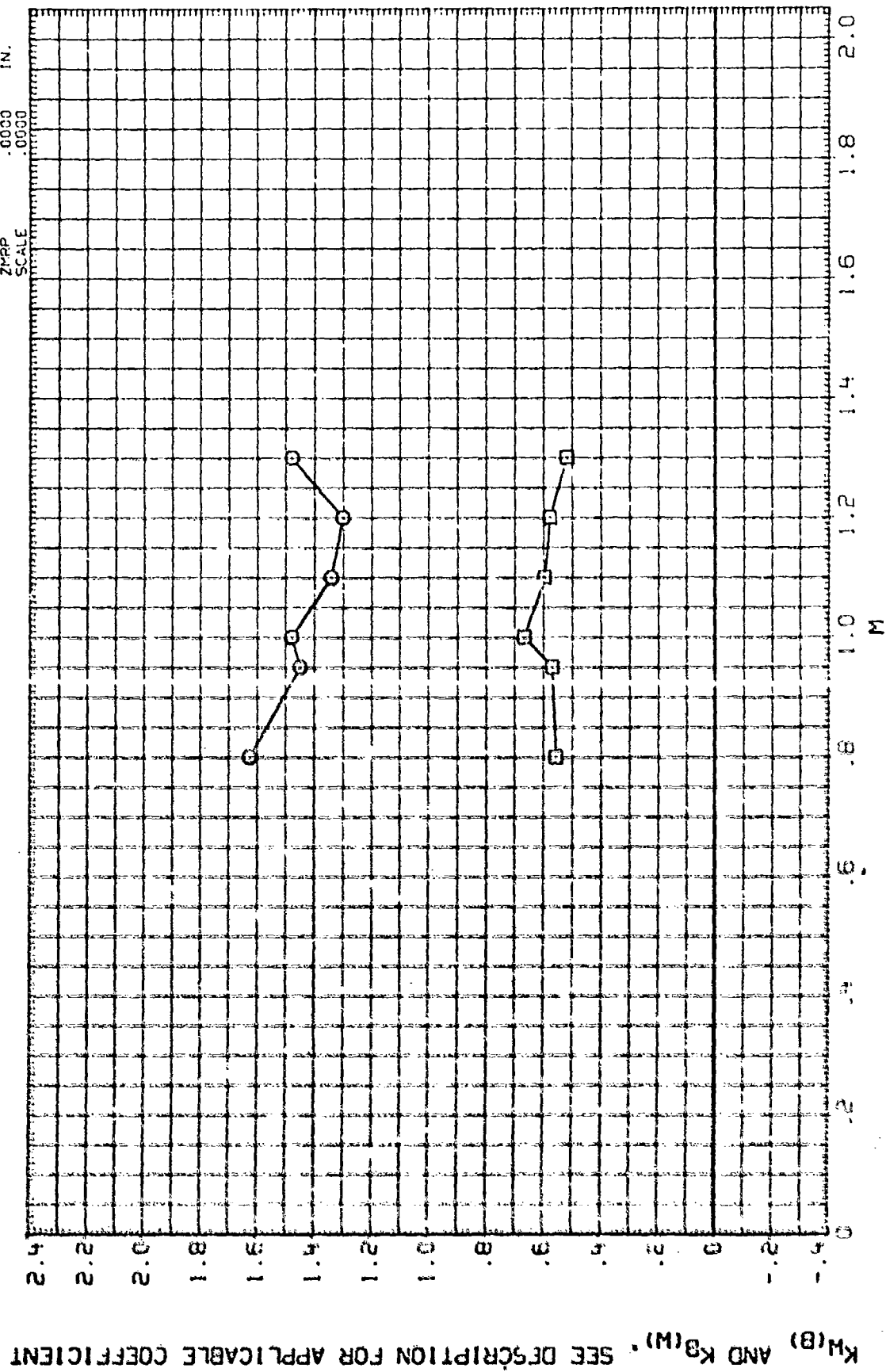


FIN-BODY INTERFERENCE FACTORS - FIN F8

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	C/D	T/C	DELTA	LAMBDA	REFERENCE INFORMATION
(F19105)	○	AEDC 15W170, WING IN PRESENCE OF BODY, F9 KH1B)	1.750	.029	45.000	.000	SREF 18.4100 IN. 52. IN.
(F19205)	□	AEDC 15W170 BODY IN PRESENCE OF WING, F9, KB1H)	1.750	.029	45.000	.000	LREF 7.0000 IN.
							BREF 2.6400 IN.
							XMRP .0000 IN.
							YMRP .0000 IN.
							ZMRP .0000 IN.
							SCALE .0000



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	C/D	I/C	DELTA	LAMBDA	REFERENCE INFORMATION
(F1B111)	AEDC TC 202. WING IN PRESENCE OF BODY. F15 KX1B)	1.000	.010	45.000	.000	SREF 10.4000 SQ. IN.
(F1B211)	AEDC TC 202. BODY IN PRESENCE OF WING. F15 KX1M)	1.000	.010	45.000	.000	LREF 4.0000 IN.
						BREF 2.6000 IN.
						XMRP .0000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0030



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